Pearls ride a rollercoaster of global events, punctuated by COVID and climate change

By Kenneth Scarratt, President
CIBJO Pearl Commission

The most recent in-person CIBJO Congress, held in Bahrain in November 2019, seems like a lifetime ago. For the last two years we have witnessed a rollercoaster of global events that few if any of us "in our wildest of nightmares" may have predicted as we sat together in the Bahrain Bay Four Seasons Hotel, debating and enjoying each other's company, while learning something of the "culture" surrounding natural pearls.

Indeed, these events, with COVID-19 and its stream of deadly variants being at the forefront, are still plaguing us today, hence the 2021 Congress in November that now is being held virtually, rather than in-person.

Kenneth Scarratt, President of the CIBJO Pearl Commission.

Let us hope that in 2022 we can once again come together for a productive in-person congress. “Time will tell,” sings the hip-hop artist Questlove. “Time is always telling. Time never stops telling.”

Unquestionably, as with all other industries, pearling, and more particularly the companies and individuals deeply involved in the pearl sector, have been impacted to varying degrees by the global COVID pandemic. For while the molluscs remain blissfully unaware of the situation and continue their nacre production come what may, travel restrictions, both local and international, along with compliant social distancing, have resulted in many members of staff not being able to get to, or having been stuck on farms for long periods.

As we compile this report, the populations of key pearl culturing countries remain “locked down.” These two emotive words, which previously were associated more with corrective institutions, have now become emblazoned on the international vocabulary, where their meaning is unfortunately understood similarly by the general global population.

Importantly for us in the sector, these restrictions have demanded a re-think of live auction sales methods. This has occurred, and there is now a clearly distinguishable move towards online alternatives. More of this will be spoken about in the individual regional reports in the following pages.

But let us remember brighter times and look forward to an even sunnier future as we travel through this period and evolve as we must.

GUIDE FOR CLASSIFYING PEARLS

The 2019 congress in Bahrain saw the approval for publication of the first edition of the CIBJO Guide for Classifying Natural Pearls and Cultured Pearls, firstly by the Pearl Commission and then by the CIBJO Board of Directors.

It was compiled by the Pearl Commission, and individual members of its Steering Committee contributed actively to the edition. They are to be thanked for their dedication in bringing the content to its present conclusion.

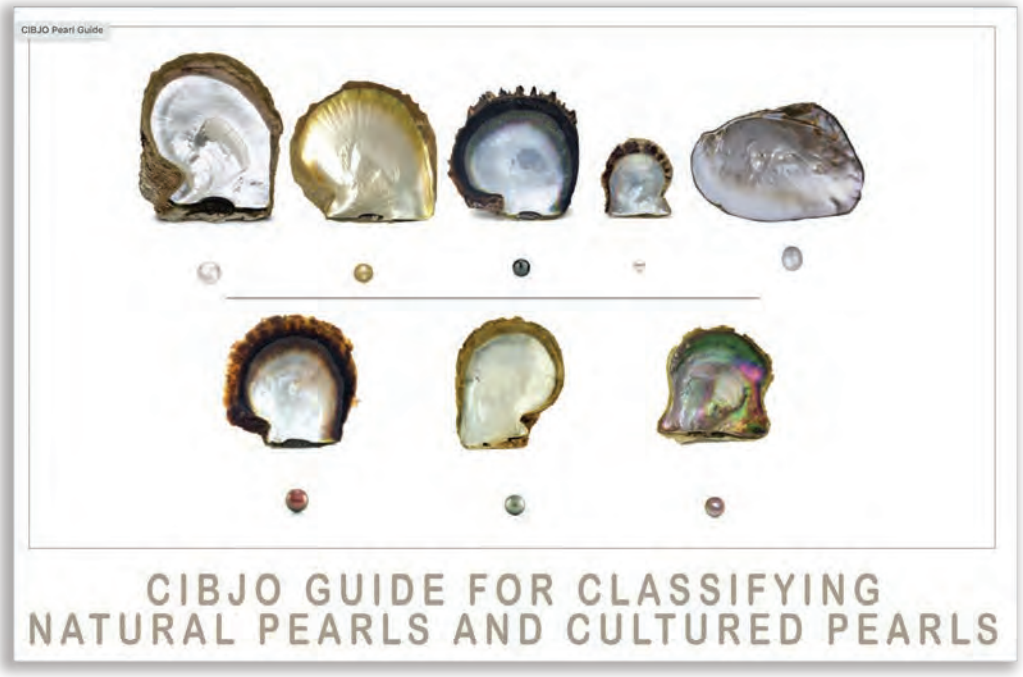
The CIBJO Guide for Classifying Natural Pearls and Cultured Pearls is a primer about pearls tailored for jewellery consumers and pearl lovers, and it is designed to serve as an educational tool for the pearl and jewellery trades,

Peter Bracher, Vice President of the CIBJO Pearl Commission.

Shigeru Akamatsu, Vice President of the CIBJO Pearl Commission.

Jacques Christophe Branellec, Vice President of the CIBJO Pearl Commission.

and gemmological laboratories. Sixty-two pages long and well-illustrated, the document provides a comprehensive overview of natural and cultured pearls, from both seawater and freshwater sources, and highlights the important parameters by which their appearance can be described and assessed in terms of physical dimensions and quality.



The Guide can be downloaded free of charge from the CIBJO website by CLICKING HERE.

In the months that the document has been available online, it has already proven to be very popular, among professionals active in the industry for many or just a few years, as well as members of the public and novices to pearls and pearling.

It should be stated that the Guide complements the CIBJO Pearl Blue Book (which can be downloaded for free by CLICKING HERE), which is also produced by the Pearl Commission and is considered the authoritative reference for technical standards and nomenclature in the pearl sector.

The Guide has recently been translated wonderfully into the Thai language by the Gem & Jewelry Institute of Thailand (GIT), a CIBJO member. It will shortly appear on GIT's website as a resource for Thailand. The CIBJO Pearl Commission commends its efforts in educating the Thai population on pearls and pearling.

Future editions of the CIBJO Guide for Classifying Natural Pearls and Cultured Pearls are planned, where the content will be expanded. The Pearl Commission Steering Committee is actively soliciting input, both for the Guide and the Pearl Blue Book. It welcomes comments and suggestions from wherever they may come, with the assurance that all opinions are valid and worthy of discussion. A frank, open and fully transparent discourse, no matter how tough, is central to the creation of workable and successful standards documents.

Illustrations from the CIBJO Guide for Classifying Natural Pearls and Cultured Pearls.

A GLOBAL VIEW OF PEARLS AND PEARLING

The period covered by 2020 and 2021 was a momentous one for the pearl and pearling sector, largely because the sudden and almost all-encompassing onset of the COVID pandemic and its knock-on effects. But there were other, also extraneous factors that played a part, and most prominently the growing threats of global warming and climate change. To provide a snapshot of what was experienced, the Pearl Commission solicited contributions from leading industry players from the world. We thank them all for their input.

Australia

***Peter Bracher**, Executive Director, Sales and Distribution, for Paspaley Pearling, provides a candid perspective of a pearl producer some of the operational challenges faced since the beginning of 2020.*

The market for white South Sea pearls had been through a period of steady growth from 2013 to early 2020, when COVID-19 first began to have an impact on business operations and international consumer confidence.

The first half of 2020 was particularly difficult because COVID and its shockwaves on business evolved so rapidly. In February, Australia seemed to be comparatively unaffected by the pandemic, but by March the borders were closed, and we were forced to scramble to ensure business continuity in both production and distribution.

The most challenging obstacles in both areas were the strict travel restrictions that were imposed virtually overnight.

The wild oyster pearling grounds where we collect most of our oysters are located along the Kimberley coast in Western Australia, as are the majority of our pearl farms, but our fleet and staff are based and serviced from Darwin in the Northern Territory. Our pearl technicians are Japanese and generally enter Australia in March and spend six months here before returning home at the end of the season.

But by March 2020, Australia had basically closed its borders to the rest of the world. To further complicate matters, strict domestic border closures were implemented by Western Australia and the Northern Territory, largely to protect the vulnerable indigenous communities that exist predominantly in those regions.

By late February it also became apparent that our usual distribution channels would no longer function. This occurred

Peearling operations off the coast of Western Australia. Photo courtesy of Paspaley Pearling Company.

A Paspaley diver during pearling operations. Photo courtesy of Paspaley Pearling Company.

with the cancellation of the March Hong Kong jewellery show, in whose vicinity we normally hold one of our three major auctions.

Our pearl production is an expensive exercise involving a fleet of ships, significant numbers of staff working in remote locations and complex logistical planning and execution. It is not something that can simply be turned on and off, or even wound back to save costs, without significant long-term impacts on production results. Furthermore, the long husbandry period for Australian pearls means that there is no return on investment for at least three years.

This required all of us to make difficult decisions about how to cash flow the 2020 production season in the potential absence of a ready market for our products.

We decided to proceed with our planned production schedule, and this required us to negotiate with Federal, State and Territory governments for concessions that would permit our technicians to enter Australia through Sydney, then travel to the Northern Territory and finally to Western Australia. It involved chartering flights from Japan to Sydney and then to Darwin, with 14-day quarantines at our expense between each leg. It not only was a costly exercise, but it was also stressful for our staff.

ONLINE AUCTIONS LAUNCHED

It quickly became apparent that jewellery shows, auctions and private selling events were likely to be disrupted for the foreseeable future, so we immediately began developing online alternatives to provide supply continuity. It seemed likely that demand would decrease but we wanted to ensure that what demand existed could be supplied.

Our first online auction was held in April 2021. It was only modestly successful. Demand was low compared to most auctions because of the uncertainty of COVID's medium to long-term effects on the global economy. Another factor was that, although we put a great deal of effort into ensuring that the videos and photos of lots were as accurate as possible, customers were not accustomed to buying pearls without an opportunity to physically inspect them.

We decided from the first auction to hold our prices at similar levels to the previous year. Prices did fall to some extent, but we declined the majority of offers, indicating to the market that we did not intend to dump goods to achieve cashflow.

The second auction sold about 10 percent more than the first for slightly higher prices. We have now held an online auction almost every month since April 2020 and each has performed better than the last in both price and total value sold.

Our most recent auction achieved more than four times the total sales of the first auction.

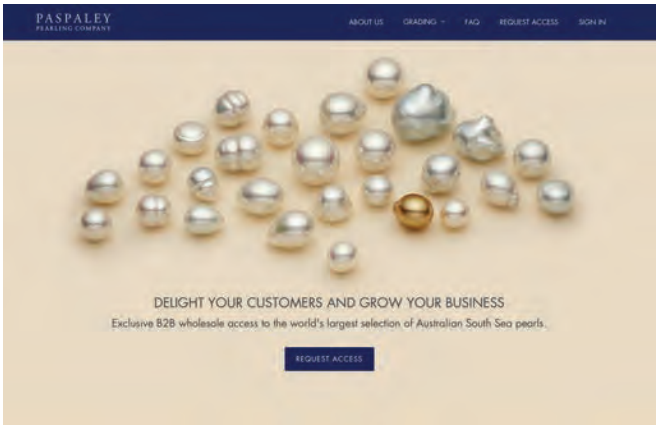
Many buyers have expressed their appreciation for holding prices steady, thereby supporting the value of their stock holdings. Prices for most categories of goods are now significantly higher than they were immediately prior to COVID.

ONLINE WHOLESALE PLATFORM

The other major addition to our distribution was the development of an online wholesale platform for day-to-day business. It took several months to develop and is designed to provide 24-hour access to a selection of items to wholesalers, manufacturers and retailers from anywhere in the world.

The objective of the platform is to ensure that traders can access pearls even if they are unable to attend trade shows or if their regular suppliers are unable to reach them due to travel restrictions.

We do not expect this site to replace established distribution networks, but it will be a useful tool to ensure



Paspaley's online wholsale platform, launched in August 2021, has enabled clients to maintain supply despite the disruptions caused by the COVID lockdowns.

that pearls are available whenever they are required. The platform allows registered customers to instantly check availability and prices for any pearl calls they may have, without having to worry about the delays caused by time zone differences. Items can be purchased through the site and shipped the following day.

We launched the platform to our existing customer base in August 2021 on a test basis, to allow any technical or practical issues that arose to be resolved. The stock available on the platform includes a wide variety of items including single pieces, pairs, strands and unique items that will be regularly replenished.

We plan to eventually make the site available more widely to all approved trade participants.

Pierre Fallourd *provides a further perspective on the Australian pearling sector, through to September 2021.*

In terms of effective resource management, the Australian pearling industry remains the only one MSC certified in the world. The Marine Stewardship Council (MSC) is the world's leading certification and eco-labelling program for sustainable seafood, and its certification system is a way of showing that a fishery meets international best practice for sustainable fishing.

The process started in 2017 and is due for renewal every five years. It focuses on resource management, and from our perspective in particualr Pinctada Maxima wild stock fishing.

The opportunity to include hatchery born oysters in the certification process is being considered, with producers being certified rather than the industry and its related fishery quota and license system.

Latest wild oysters stock sampling and surveys performed along a 130-kilometre beach from in the Broome area of Western Australia are considered high and increasing. Water leases and license holdings remain unchanged.

ON-GOING BIOSECURITY CONCERNS

Whilst symptoms have evolved over the course of the last decade, the industry continues to be affected by the Oyster Oedema Disease (OOD) that hit Australian pearling grounds in 2006. The extensive research conducted by industry and government suggests the causative agent is most likely a

Photo courtesy of Paspaley Pearling Company.

virus, a mycobacterium (tiny bacteria), or possibly a plasmid affecting a usually benign bacterium. Basically, something in the micro-biome has changed which has then led to these health issues.

In terms of climate change, the Sea Surface Temperature (SST) has increased dramatically, as per data collected by government scientists. Temperature is known in marine communities to be a major factor in of bacterial and viral changes. The recent report issued by the Intergovernmental Panel on Climate Change (IPPC) points to faster warming, intensifying of the water cycle, and a continuing rise in sea-levels.

Extreme sea level events, which previously occurred once in 100 years will be happening every year by the end of this century. More frequent marine heatwaves, ocean acidification, and reduced oxygen levels are all clearly linked to human influence.

Ocean acidification, shifts in marine currents and nutrients flows, as well as extreme weather occurrences, directly challenge nacre growth productivity, resulting in smaller pearls and longer cultivation time.

A variety of innovative approaches ranging from resilient bloodstock breeding to alternative farming techniques and equipment will continue to be undertaken to alleviate mortality and slow growth issues, as well as other effects induced by climate change

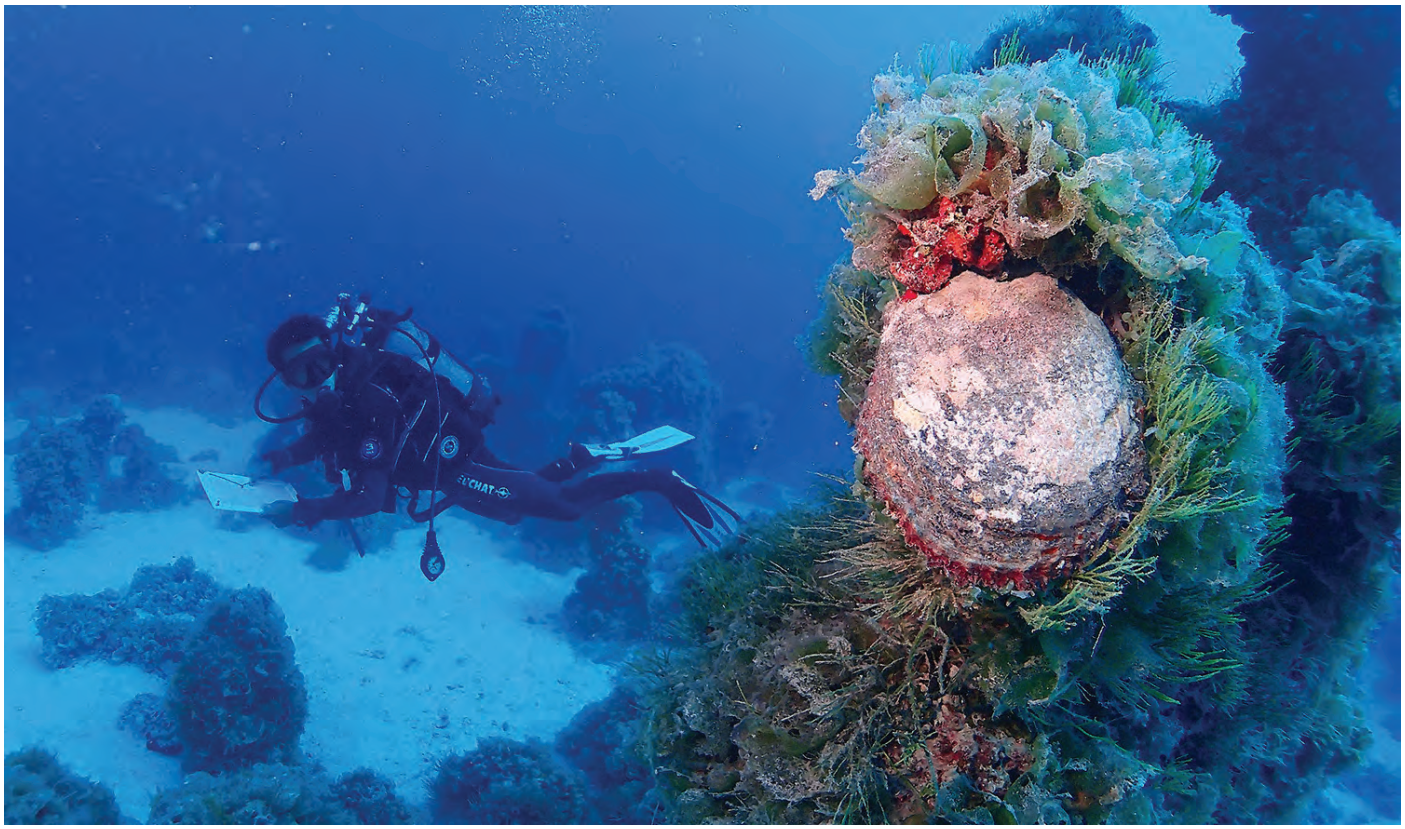
THREATS AND OPPORTUNITIES

Whilst significant in value within the global cultured pearl community, the Australian pearling industry remain relatively small when compared to other aquaculture ventures.

It is interesting to note the rise of Australian Akoya farming both for food and pearls. Unfortunately, the recent floods on the east coast led to an almost complete wipe out of the Akoya population in areas that had been used by government and industry to study and farm the species for over 25 years. This was because of the infusion of freshwater, running off several kilometres off the coast.

But hardship often leads to increased creativity and multi-species aquaculture initially developed to alleviate finfish negative output is being reconsidered and applied to non-fed species, in particular molluscs and seaweed. Both species appear to be compatible. Multiple services, ranging from provisioning and regulating as well as habitat support are beneficial and deliverable.

A pearl farm acts as a suspended oyster reef and delivers the same benefits, in addition to the economic activity and matching employment it generates. Those benefits often



Measuring instruments are deployed in lagoons of priority interest for the pearl farming, along with the monitoring of the wild oyster population, as a biological indicator of the health of the marine environment. Photo courtesy of the Department of Marine Resources, French Polynesia.

extend to the protection of vegetated coastal habitats where seagrass and mangrove have been identified as the most efficient carbon sequestration sinks on the planet.

A variety of initiatives revolving around blue economy and blue carbon are emerging in Australia as part of a movement towards risk mitigation in the face of climate change, increasingly complex ecosystems, extended product life cycle and the circular economy. Regulatory framework needs to evolve to accommodate those priorities and opportunities

Overall, pearl production in volume and size in Australia is unlikely to increase in the foreseeable future, potentially driving rarity and value up in what is a relatively active market. Oysters and pearls are at the forefront of on-going major environmental change and require further support and acknowledgment in their role as a vulnerable custodian of the ocean. There are inherent commercial benefits in change how pearls and the pearling industry are perceived, positioning them as custodians of responsible managed marine environments.

We believe the introduction of a section on the intrinsically sustainable nature of pearls in CIBJO's Pearl Book and/ or Guide for Classifying Natural Pearls and Cultured Pearls would benefit the industry by helping engage new and old customers alike.

Photo courtesy of the Abu Dhabi Pearls Project.

Indonesia

COVID-19 has been particularly tough on the Indonesian industry, with most companies unable to market their production overseas and the domestic jewellery market also hard hit.

In a note to shareholders in 2021 annual report, the Board of Directors of Atlas Pearls stated that "despite some unique challenges during the year, Atlas successfully met its principal objective to produce and distribute high quality, luxurious South Sea Pearls safely and sustainably". The report continues by stating that "all staff have continued to be heavily impacted by travel restrictions that interrupt the movement of both people and pearls with some staff remaining for large stretches at our isolated pearl farms. Employees are adapting to find solutions to last minute logistics from the farm level to final customer interface."

But despite the challenges, Atlas reported that it harvested more than 560,000 pearls from its seven farms in 2021, a significant increase over previous years.

Nonetheless, there has been some rationalisation in the Indonesian pearl farming industry, with several companies having recently closed, including Rosario Mutiara and PT Oriental Mutiara. The few companies that did manage to survive 2020 and 2021 relatively unscathed were those that have been able to develop their own online auction capabilities.

Several farmers have expressed their frustration at their inability to generate significant spat numbers and of the high number of mortalities experienced in their hatcheries. Environmental factors, particularly rising sea temperatures, have had some impact on production levels.

Almost all Indonesian South Sea pearls continue to be produced by hatchery rather than wild shell. This is because much of the Pinctada maxima shell in Indonesian waters is in significantly deeper water than those found off the northwest Australian coast.

French Polynesia

*A review of cultured pearl production in French Polynesia is provided by **Clarisse D'Hervilly**, Economic Affairs Officer in the territory's Department of Marine Resources.*

Today, pearl farming is the leading export of French Polynesia. In 2020, it occupied a total authorised area of 8,157 hectares spread, over 30 islands of French Polynesia – 26 islands in the Tuamotu archipelago, the island of Mangareva in the Gambier archipelago, and three islands in the Leeward Islands.

In total, around 350 pearl farms account for the Polynesian pearl production and in 2020, 5,985,000 pearls were exported, 16 percent less than in 2019.

The coming years will definitely be marked by efforts to protect and safeguard the fragile Polynesian lagoon ecosystems, through various sustainable management measures enforced across the entire industry.

The granting or refusal of an authorisation to occupy a public maritime domain for pearl farming is subject to environmental rules. Among them is compliance with the ecological ceiling of a given lagoon. This takes into account the size of the lagoon, its bathymetry, its hydrodynamics, and in particular the presence of passes and the general health of its ecosystem.

For that purpose, the Department of Marine Resources (DRM) developed the Polynesian Lagoon Observation Network (RESOLAG) in 2018 to assess the health of pearl lagoons in relation to pearl farming activity.

Other measures soon to be implemented are a charter of good pearl farming practices and production quotas per hectare.

Pearling operations in the Gambier archipeligo of French Polynesia. Photo courtesy of the Department of Marine Resources, French Polynesia.

Mexico

***Douglas McLaurin-Moreno**, a founder of Cortez Pearls, the first commercial marine pearling operation in the Americas, provides news from the Gulf of California in Mexico.*

The primary "Perlas del Mar de Cortez" farm, in Bacochibampo Bay, Sonora, on the east side of the Gulf of California, is presently growing about 120,000 "Rainbow lip" *(Pteria sterna*) and 300 "Panamic Black-lips" (*Pinctada mazatlanica*) pearl oysters under culture in their long-line culture system. It has some 20 full-time employees.

For the past 17 years, the productive yield of marketable pearls for this farm has been between 15 percent and 30 percent, with harvests of 1,000 to 4,500 bead-nucleated cultured pearls, and 300 to 500 keshi cultures pearls. In the case of "Cortez Mabe" pearls, there have been highly variable productions of 1,000 to 5,000 Mabe cultured pearls per year.

Above left and right: Mabe Pearls from the Gulf of California in Mexico. Photos courtesy of Cortez Pearls.

Pearl sizes have traditionally ranged between 8 millimetres to 12 millimetres in diameter (average is 9.3 millimetres) in past years, with a nacre coating of between 0.8 millimetres to 2 millimetres (average is 1.5 millimetres), but a cultured pearl measuring 17.3 millimetres was once produced with a 9.6 millimetres bead.

The past two years have changed these figures, with the 2020 and 2021 cultured pearl harvests having been the most successful up to date, both in the number of pearls harvested (11,900 pearls for both years) and the average size of the pearls, which finally reached 9.5 millimetres with nearly 10 percent of the pearls in the harvests surpassing the 10 millimetres threshold. But it is unclear if the company will be able to keep this recent trend.

Recently, the farm started purchasing hatchery-reared spat to complement its traditional wild-spatfall, since environmental changes have caused serious affectations in spat collection over the last 10 years.

The second farm is "Perlas del Cortez" and is a smaller, family venture established in La Paz, Baja California Sur, on the western side of the Gulf of California. It started operating in 1999 with a small stock "Rainbow Lip" (*Pt. sterna*) oysters for Mabe pearls. In 2004, the local "Panamic Black lip" *(P. mazatlanica*) was added to the farm's productive cycle. Since that year, this farm has managed to keep an average stock of 10,000 oysters of different ages for pearling operations; of these 8,000 are *Pt. sterna* and 2,000 *P. mazatlanica*. It employs 6 full-time workers and some volunteers that participate in a part-time scheme.

The company has been facing difficulties ever since the start of the COVID-19 pandemic, since tourism, which is a major source of income in the region, has been hit hard. This was especially felt at Perlas del Mar de Cortez, because of its proximity to the city of La Paz, which is a major tourist centre.

Bahrain

*Pearl specialist **Abeer Alalawi** provides a little insight into the current status of natural pearling in Bahrain.*

As reported by the majority of Bahraini divers, this year's natural pearl harvest has been considerably lower in comparison to the harvest of previous years.

The number of oysters found in the pearl beds off the archipelago of Bahrain have not decreased as a population, but the number of pearls found in sizes of 7 millimetres and above have decreased in quantity.

Pearls found in the shallow areas are more intense in colour – mostly yellows and few rarer tones of grey, with strong overtones, which is mostly due to environmental factors.

It is well known that the vast majority of the natural pearls fished around Bahrain are found in the *Pinctada radiata* ("Mahar" in Arabic) bivalve.

Natural pearls have also been found in another oyster known as the "aeysarinah." It is reported that these pearls are mostly perfect in shape (round to rounded), white to light cream in colour, medium to high lustre (trade name: Shereen quality), and in sizes up to 4 millimetres.

Most colours of natural pearls found in the shallow waters off Bahrain are yellow to golden with greenish overtones, and a few include darker greys. Photo courtesy of Abeer Al-Alawi.

United Arab Emirates

***Mohamed Hasan Ali Al Marzooqi**, provides us with some insights about pearl culturing at the Abu Dhabi Pearls Project, where he is the Technical Manager.*

The Environment Agency of Abu Dhabi (EAD) initiated a pilot programme in 2007 called the Abu Dhabi Pearls Project. Its main objective was to study the feasibility of producing high-quality cultured pearls in the warm waters of Abu Dhabi.

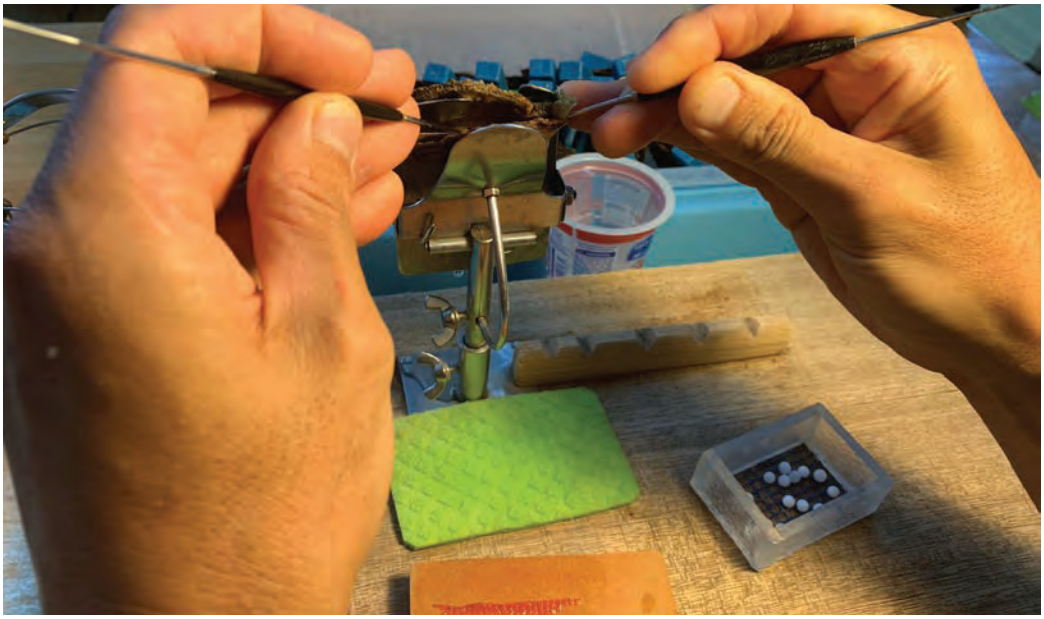
The vision of the Abu Dhabi Pearls Project is to create an eco-tourism destination and an experience that pays homage to the amazing story of pearling, as well as its traditions and evolution. In this regard, the EAD has recently branded its cultured pearls as "Abu Dhabi Pearls" to reflect the uniqueness of pearls in Abu Dhabi.

Pearl diving played a central role in Abu Dhabi's economy for thousands of years, before the discovery of oil, and the Abu Dhabi Pearl Project aims to revive this tradition.

Pearling operationa at the Abu Dhabi Pearls Project. Photo courtesy of Abeer Al-Alawi.

Over the past years, the project has grown from a pilot-scale farm to a successful facility, capable of maintaining an average of 80,000 to 100,000 oysters, and producing an average of 20,000 pearls annually.

In addition, the EAD is planning to establish a pearl grading system, tailored to its cultured pearls. Once completed, the pearl grading system will be the first grading system for *Pinctada radiata* cultured pearls in the world.



Grafting cultured pearls at the Abu Dhabi Pearls Project in the United Arab Emirates. Photo courtesy of Abeer Al-Alawi.

NEWS FROM THE GEM LABORATORIES

GEMOLOGICAL INSITUTE OF AMERICA

The Gemological Institute of America has been conducting research into the use of UV fluorescence spectroscopies for pearl identification.

Traditionally, visual fluorescence observation under both long-wave and short-wave UV radiation can provide some assistance in the identification of color origin in pearls. However, interpretations of such observations in terms of fluorescence colors and strength may differ from person to person.

Recently both short-wave UV and long-wave UV fluorescence spectroscopic methods have been developed for pearl identification in GIA and these techniques have been proven to be able to identify color treated pearls, as well as pearls that have been processed by optical brightening agents.

Optical brightening agents (OBAs) are chemical compounds that can absorb light in the ultraviolet and violet region of the electromagnetic spectrum and emit light in the blue region as fluorescence, due to their extended conjugation and/or aromaticity. Some cultured freshwater and akoya pearls may have been processed with such chemicals in order to improve their appearances (coloUr or lustre) and they tend to show strong bluish fluorescence under long-wave UV excitation (Figure 1).

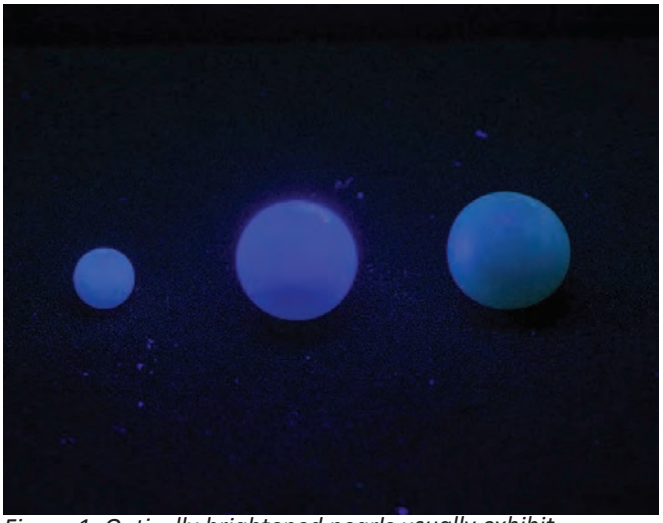


Figure 1: Optically brightened pearls usually exhibit stronger and more bluish fluorescence under long-wave UV excitation, such as the middle pearl shown in this picture. Photo courtesy of GIA.

Using long-wave UV fluorescence spectroscopy (385 nm excitation), distinct and strong fluorescence peak at around 420–440 nm can be detected, confirming that the pearl has

Figure 1: Short-wave UV fluorescence spectroscopy can readily separate various naturally colored and treated pearls, such as the two groups of pearls shown in this image. Left group: treated pearls; Right group: naturally colored pearls. Photo courtesy of GIA.

been processed with such agents (Zhou et al., 2020). More recently, such process has also been observed on some naturally colored freshwater "Edison" pearls (Zhou et al., 2021).

Short-wave UV fluorescence spectroscopy (275 nm excitation) can be applied to pearls in order to check the fluorescence from their organic contents. The amino acid tryptophan is a major UV fluorophore found in nacre. It has an absorption band at around 280 nm and can subsequently fluoresce at around 320–360 nm, a key indication of whether the nacre has been treated or processed, as many of the treatments and processes can reduce this fluorescent feature (Tsai and Zhou, 2021; Zhou et al., 2021).

Using the short-wave UV fluorescence spectroscopy technique, naturally colored and treated pearls of similar colors can be quickly separated (figure 2).

SWISS GEMMOLOGICAL INSTITUTE SSEF

In 2021, a new pearl species was discovered in a historic pearl necklace, following DNA fingerprinting analysis by the Swiss Gemmological Institute SSEF. The pearl necklace contained saltwater natural pearls and a few freshwater natural pearls. This is not uncommon in historic natural pearl jewellery, as pearls were often collected and mixed together unknowingly.

DNA fingerprinting of three randomly selected pearls from the necklace showed that one of the pearls could conclusively be identified as being from the *Pinctada radiata* species (a Persian Gulf and Ceylon pearl oyster). It is a species that can produce pearls that commonly are called 'Basra pearls' in the trade.

DNA fingerprinting of pearls was first developed in 2013 (Meyer et al., 2013). By extracting minute amounts of nacreous material from a pearl, very small amounts of DNA can be found. This DNA can be analysed and provides information about the genetic identity of the oyster that produced the pearl. As such, conclusive species identification of a pearl is made possible. This is often not possible using common gemmological techniques.

Interestingly, the other two sampled pearls were attributed to another species: *Pinctada persica* or *Pinctada margaritifera persica*, which is a rare member of the *Pinctada margaritifera*

An exceptional pearl jewellery set that consisted of 63 natural pearls, with 61 of them being strung on a thread and two additional loose natural pearls. Two randomly selected pearls were identified as being from Pinctada persica following DNA fingerprinting analysis. This is the first time this species has been reported to produce high-quality natural pearls. Photo: SSEF.

A selection of pearls from different species. DNA fingerprinting can help identify which species a pearl came from. Photo: Michael Krzemnicki, SSEF.

species complex. To SSEF's knowledge, this was the first time that pearls from *Pinctada persica* have been reported. To date this species has only been found exclusively in the Persian Gulf (Ranjbar et al. 2016).

The three described pearls were also dated using radiocarbon age dating (Krzemnicki & Hajdas, 2011). It was assumed that these pearls are rather historic in age, which was confirmed by radiocarbon dating , which indicated they probably formed between the 16th and 18th century, with the highest probability of formation having been in the 17th century.

This example shows how modern science can help unlock many of the mysteries still associated with how pearls form.

It is also important to note that CIBJO Pearl Blue Book is based on the latest available science and is regularly updated to incorporate recent findings.

PHOTO CREDIT
Cover photo courtesy the Department of Marine Resources,
French Polynesia