

# PEARL

珍珠特刊  
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**JEWELMER:**  
Crafting a  
regenerative legacy  
缔造永续传承

Next-generation gem  
新一代珍珠

# Pearl impact:

## Transforming journeys into lasting value

## 珍珠成长历程缔造永恒价值

Banking on its sustainability credentials, the pearl could potentially become the world's first 'nature positive gem' based on documented environmental benefits and social impact. 珍珠凭借强大的环境效益和社会影响力, 势将位踞全球首款“自然正值宝石”。

| Pierre Fallourd |



From left: Mangrove at high tide in the Cygnet Bay pearl farm, Western Australia; *Pinctada maxima* oysters in Western Australia. Pictures courtesy of Pearls of Australia 从左至右: 西澳大利亚西格奈特湾珍珠养殖场涨潮时的红树林; 西澳大利亚的大珠贝。图片由澳大利亚珍珠公司提供



The link between sustainability and pearls was first noted by Swiss gemmologist Laurent Cartier in 2010. Soon after, several sectors of the industry started pursuing their own sustainability agenda.

Australia achieved a Marine Stewardship Council-certified sustainable pearl fisheries status in 2017 while in 2018, J Hunter Pearls, Jewelmer and Paspaley Pearling Company launched “The Blue Pledge – Sustainable Pearls,” promoting responsible pearl farming to support conservation and social enterprise.

A new generation of consumers is reshaping the jewellery industry. Reputation and trust are replaced by transparency and traceability while voluntary Corporate Social Responsibility (CSR) efforts shift to financial Environmental, Social and Governance (ESG) standards. Code of Practice (CoP) and Chain of Custody (CoC) protocols have become standard, and technology now enables unique credentials for individual products beyond category certification.

Pearls are traditionally valued based on physical attributes that reflect the journey of the mollusc it grew within. Therefore, there is a natural incentive for pearling companies to look after their people and the molluscs, which will grow the pearls.

Most producing countries have exceeded their compliance requirements and created voluntary social and environmental codes of practices to guide responsible pearl farmers and farmers.

Industry players and stakeholders acknowledge that increased transparency around geographical origin and social and environmental impact can deliver substantial



Akoya oyster cleaning raft at Ago Bay, Mie Prefecture, Japan. Photo credit: Pierre Fallourd. (Inset) White South Sea pearl. Photo courtesy of Pearls of Australia 日本三重县英虞湾的Akoya珍珠贝养殖平台 摄影: Pierre Fallourd (插图) 南洋白珠图片由澳大利亚珍珠公司提供

value, ranging from social licence to operate to enhanced natural capital – all of which may also amplify storytelling at retail level.

Natural capital consists of four categories of ecosystem services: Provisioning, regulating, supporting and cultural.

### Nature positive gems

Could pearls be the first nature positive gems? Evidence supports this theory.

Results of Life Cycle Assessments (LCA) conducted in Japan and Australia in 2023 indicated a very low emission footprint for saltwater pearls, ranging from a few grams to a few kilograms of carbon dioxide equivalent (CO<sub>2</sub>Eq) per harvested pearl.

For context, a typical car journey of just 3 kilometres produces approximately 1kg of CO<sub>2</sub>Eq emissions. A pearl farm producing 10,000 pearls per hectare (each with a 1kg carbon footprint) requires US\$1,000 in carbon credits at US\$100 per tonne, or just 10 cents per pearl.

Oysters also help improve water quality. Excess nutrients in oceans cause eutrophication, harmful algal blooms, oxygen depletion and shifts in species composition. Oysters naturally filter and remove these nutrients while feeding. Assuming one hectare of pearl farm produces 5t of oysters, which then remove 50kg of nitrogen valued at US\$100/kg and 2.5kg of phosphorus valued at US\$500/kg, the total bio-extraction equivalent value would be US\$6,250.

Farming gears such as ropes, baskets and nets hosting the oysters, and the oysters themselves, likewise provide support, shelter and food – further boosting biodiversity. Studies estimate the value of catchable fish in an oyster-suitable marine environment ranges from US\$1,000 to US\$5,000 per hectare.

Meanwhile, pearl farming is labour-intensive, creating direct skilled employment in often remote areas, which can be complemented by education and empowerment opportunities for surrounding communities. Labour costs attached to one hectare of pearl farm alone can account for up to 30 per cent of pearl revenues generated at farm gate.

Marine pearl farming's environmental impact varies significantly depending on cultivated species, farming methods and the environment. The above assumptions, however, support pearl farming's nature net positive potential where the value of benefits exceeds the costs.

As such, there is a need for a more comprehensive evaluation through species- and location-specific measurement pilots to confirm these estimates. Community and ecological value alongside economic metrics should be recorded using a balance sheet.

### How can value be realised?

Demonstrating value to ecosystems and communities provides a variety of benefits: For producers, it enhances social and environmental licences to operate and improves productivity while for traders and retailers, it ensures compliance and creates compelling sustainability and storytelling opportunities.

Collecting and processing consistent data presents significant challenges, given the complexity and length of the pearl value chain.

Track-and-trace initiatives are designed to associate products with verified sustainability credentials. Meanwhile, ongoing dialogue is centred on establishing a global framework and reporting system that accommodates the transparency requirements of retailers as well as the needs of small, non-vertically integrated farmers.

In 2024, Onegemme, a B2B trading platform for single-origin pearls, partnered with Provenance Proof – a blockchain traceability service from Gübelin – to provide transparent origin tracking and social and environmental impact profile.

Each pearl sold includes a transferable provenance certificate, impact profile and detailed description.

The World Jewellery Confederation (CIBJO), for its part, is adding a 10-page section on sustainability initiatives by pearl-producing countries to its Pearl Guide. This supplement builds on previous content about responsible pearling and its community and environmental benefits introduced in Shanghai in 2024.

The Gemological Institute of America (GIA), meanwhile, reinforced its pearl evaluation capabilities by introducing a nacre continuity scale, which refers to the thickness and evenness of layers that form on a pearl. It was unveiled in May 2025.

These changes highlight how a mollusc's journey shapes a pearl's physical traits. Social and environmental factors affect not only the pearl's appearance but also its value.

Laurent Cartier在2010年首次提倡可持续发展珍珠议题，促使整个行业积极和应。到了2017年，澳大利亚获得MSC可持续珍珠渔业认证，而J Hunter Pearls、Jewelmer和Paspaley Pearl Company也在2018年发起了“蓝色承诺”(The Blue Pledge)，以推广责任珍珠养殖。

当今的消费者不仅注重商品声誉，更重视透明度和可追溯性。自愿性企业社会责任(CSR)已演变为环境、社会及企业管治(ESG)方面的财政标准，实践准则(CoP)和产销监管链(CoC)标准协议也成为行业规范。今天的技术发展，亦有效推行更仔细精准的产品认证。

珍珠的价值和品质直接反映了牡蛎的生长环境，是驱使业者履行环境和社会责任的强大诱因。大多数生产国所实施的自愿性行业准则，都已超越了合规基本要求。

行业持份者意识到，提升产地和环境影响方面的透明度能够创造价值，当中包括运营合法性以及提升自然资本(包含四大范畴的生态系统服务：供给、调节、支持和文化)，同时使零售叙事内容更丰富。

### 自然正值宝石

珍珠有机会成为首批“自然正值宝石”(nature positive gems)吗?证据表明可能性甚高。

日本和澳大利亚的生命周期评估(LCA)分析指出，海水珠的碳足迹微乎其微，每颗珍珠仅排放几克到几公斤的二氧化碳当量。相比之下，汽车行驶3公里所产生的二氧化碳当量已达到1公斤。每公顷生产10,000颗珍珠的养珠场，其碳补偿成本仅为每颗珍珠10美分。

牡蛎透过自然过滤水中的剩余养分，避免有害藻类滋生和耗尽氧气，从而改善水质。每公顷容纳5吨牡蛎的珍珠养殖场，可通过生物提取方式去除约6,250美元等值的营养物质。

养殖场的基础设施和牡蛎本身创造了海洋栖息地，有效提升生物多样性。据研究估计，由此衍生的可捕捞鱼类价值为每公顷1,000至5,000美元。



Akoya oyster mantle cutting at Ago Bay, Mie Prefecture, Japan. Photo credit: Pierre Fallourd 日本三重县英虞湾的Akoya珍珠贝外套膜切割工序。摄影: Pierre Fallourd

珍珠养殖业属于劳动密集型产业，能创造偏远地区的技术性就业机会，同时支持教育工作和周边社区发展。仅一公顷珍珠养殖场的劳动力成本，就可能占到养殖场交货收入的30%。

养殖业对环境的影响因物种和养殖方式而异，但初步数据显示其利多于弊。业者必须开展针对特定物种的测量试点来进行验证，全面记录社区、生态和经济指标。

### 如何实现价值?

创建生态系统和社区价值能惠及所有持份者，令珠农取得运营合法性并提高生产力，而贸易商和零售商则致力确保合乎规范，并把握故事营销的机会。

珍珠价值链向来错综复杂，收集数据自然充满挑战性。但如今，一些追踪项目将产品与经过验证的可持续性凭证联系起来。业界并商讨制定全球框架，平衡市场对零售商透明度的关注和小型珠农的需求。

2024年，单产地珍珠B2B交易平台Onegemme与古柏林旗下区块链溯源服务“原产地证明”(Provenance Proof)达成合作，为客户提供透明的产品信息：每颗售出的珍珠均附带可转让的原产地证书、社会环境影响信息及其他详细描述。

国际珠宝首饰联合会(CIBJO)正在扩展《珍珠指南》的内容，新增的章节以2024年上海会议上提出的责任珍珠信息为基础，重点介绍珍珠生产国的可持续发展举措。

与此同时，GIA美国宝石研究院在2025年5月推出了珍珠层连续性评级，作为其珍珠分类系统的补充。

种种改变凸显了珍珠牡蛎的孕育历程如何塑造珍珠的物理特征。社会和环境因素不仅影响珍珠的外观，也是其价值的决定因素。



White South Sea pearl. Photo courtesy of Pearls of Australia 南洋白珠。图片由澳大利亚珍珠公司提供。

### About the author 笔者简介

Pierre Fallourd worked with golden South Sea pearl specialist Jewelmer from 1998 to 2013, helping elevate the coveted golden pearl to greater heights. He then managed Atlas Pearls from 2014 to 2019. He is now a purpose-driven consultant on a mission to transform the way people view and appreciate pearls while promoting pearl provenance. He is the co-founder of Onegemme.com, a trading platform dedicated to providing single-origin quality pearls with positive impact. Pierre Fallourd在1998至2013年间，与南洋金珠专家Jewelmer合作，将本已极受欢迎的金珠推向新高峰。而在2014至2019年，他负责管理Atlas Pearls。他目前是一名以目标为导向的顾问，以改变人们观赏珍珠的方式及促进珍珠溯源为其当前使命。他是Onegemme.com的联合创始人，这是一个致力于提供具有积极影响的单一产地优质珍珠的交易平台。