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THE WORLD JEWELLERY CONFEDERATION

2021-1
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CIBJO/Pearl Commission

CIBJO GUIDE FOR CLASSIFYING NATURAL PEARLS AND CULTURED PEARLS

Image from "Monitoring Programme for the oyster bed sites" Prepared for: Directorate of Human Resources & Finance – Ministry of Culture, Kingdom of Bahrain

The CIBJO pearl classification guide highlights the important parameters by which the appearance of natural pearls from the Akoya complex and cultured pearls from *P. maxima* can be described and assessed in terms of physical dimensions and actual quality. Further it provides general information on many other varieties of natural and cultured pearls.

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NATURAL PEARLS

Natural pearl formations secreted, without human intervention, in the interior of molluscs and **within a naturally formed pearl sac**. They are composed of a complex scleroprotein named conchiolin and of calcium carbonate in the form of aragonite and or calcite arranged in concentric layers. Natural pearls may be nacreous or non-nacreous.

CULTURED PEARLS

Cultured pearls are formed in the interior of living molluscs **within a cultured pearl sac** with human intervention and a variety of conditions depending upon the mollusc and the goals. Cultured pearls may be nacreous or non-nacreous.

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A collection of natural Pinctada radiata pearls

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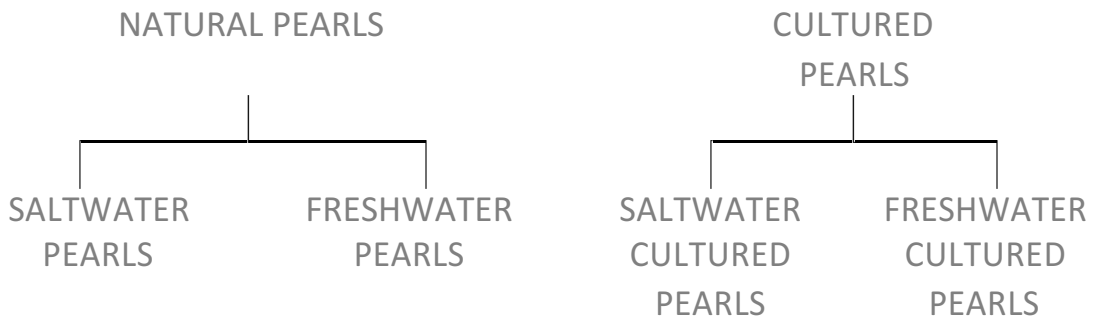
PEARL CATEGORIES AT A GLANCE



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PEARL CATEGORIES EXPLAINED

NATURAL PEARLS

Produced by various species of wild saltwater and freshwater molluscs

SALTWATER PEARLS

Produced by various species of marine molluscs including the pearl oysters, common edible oysters, snails (gastropods) clams, and scallops.

FRESHWATER PEARLS

Produced by various species of freshwater molluscs in rivers and lakes.

CULTURED PEARLS

Produced within many and various species of wild-caught or hatchery produced saltwater or freshwater molluscs in a pearl farm environment as the result of the creation of a cultured pearl sac, developed from the tissue of a donor mollusc, within which the cultured pearls are formed. Cultured pearls being instigated by man can be beaded (where a bead is used as the substrate for nacre growth) or non-beaded

SALTWATER CULTURED PEARLS

Produced predominantly by three species of Pearl Oysters.

FRESHWATER CULTURED PEARLS

Produced by clams and mussels in freshwater lakes and rivers.

ORIENTAL PEARLS

"Oriental Pearl" is the name traditionally used for saltwater natural pearls from the Orient (broadly including Asia and the Far-East). These pearls were considered the most beautiful of all pearls, and had the most desirable shapes and sizes. They had a unique appearance which combined a deep lustre and subtle colours that were visible through their translucent "skins" – this feature being described as a pearl's "Orient".

IMITATIONS OF PEARLS

Imitations of pearl are products that only simulate the appearance of natural or cultured pearls. They are not produced within the body of molluscs but are manufactured products made in factories.

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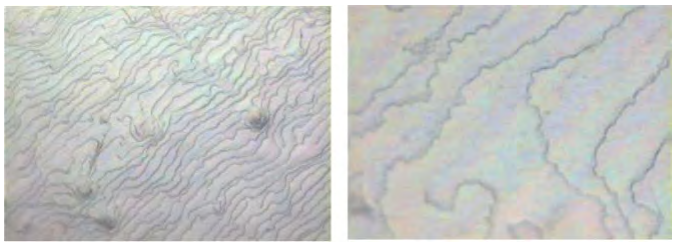
PRIMARY PEARL PRODUCING MOLLUSCS OF NATURAL AND CULTURED PEARLS

A large number of molluscs are capable of producing pearls but only particular species have the capability to produce pearls of a quality suitable for use in jewellery.

Saltwater Nacreous Bivalves – Producers of nacreous (sometimes non-nacreous) natural and cultured pearls



The appearance of nacre at low (left) and high (right) magnifications

Nacre is the biogenic material of nacreous natural and cultured pearls. Nacre is composed of layers of microscopic platelets of aragonite (calcium carbonate), bound together by a fine network of a complex scleroprotein called conchiolin. This characteristic structure produces optical effects (orient, overtone) from within the natural pearl or cultured pearl. Nacre is secreted from the mantle of pearl oysters, some other bivalves, e.g., freshwater mussels, and some gastropods

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Pinctada maxima

Australian South Sea pearl oyster

Adult size range: 20 cm – 30 cm Australian pearl oysters are predominantly of the silver-lipped variety, but also include some gold-lipped variety. Source of 75% of the world's supply of mother-of-pearl[1] shell. Source of both natural and cultured pearls. One of the world's largest pearl oysters. North Australia has the world's last remaining commercial quantities of wild South Sea pearl oysters.

Silver lipped Pinctada maxima

Australian South Sea bead-cultured pearl. Typical size range: 11 mm - 16 mm, with rare examples exceeding 20 mm. The Cultivation period for a pearl takes 2-3 years one bead cultured pearl per shell / operation.

Australian South Sea non-bead-cultured (keshi) pearl Typical size range: seed pearl sizes (less than 2mm) and upwards, with rare examples exceeding 15 mm.

Australian South Sea natural pearl. Typical size range: seed pearl sizes (less than 2mm) and upwards, with rare examples exceeding 20 mm.

Philippine South Sea pearl oyster

Adult size range: 20-30 cm. One of the world's largest pearl oysters. Source of both natural and cultured pearls. Can be found in the wild, although majority used for cultured pearls are hatchery-bred and non-extractive. One *Pinctada maxima* can produce one South Sea bead-cultured pearl at a time.

Gold lipped Pinctada maxima

Philippine South Sea bead-cultured pearl. Typical size: 9-16 mm, with rare examples exceeding 18 mm. The majority the South Sea bead-cultured pearls from Philippine waters are yellow with the comparatively rarer 'golden' being the desired production focus. Cultivation period for a pearl takes 2-3 years one bead cultured pearl per shell / operation.

Philippine South Sea non-bead-cultured (keshi) pearl. Typical size range: seed pearl sizes (less than 2mm) and upwards, with rare examples exceeding 10 mm

Philippine South Sea natural pearl. Rare - typical size range: seed pearl sizes (less than 2mm) and upwards, with very rare examples exceeding 10 mm.

[1] the smooth, hard, iridescent coating on the inner surface of some species of molluscs, composed of microscopic crystals of aragonite (a form of calcium carbonate) deposited in thin layers with organic conchiolin; scientifically known as nacre. Usually natural pearls produced by the particular mollusc have the same colour composition and general quality as the mother-of-pearl of the particular mollusc.

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Gold lipped Pinctada maxima

Asian South Sea pearl oyster

Adult size range: 20 cm – 30 cm Asian pearl oysters are a mix of the gold-lipped and the silver-lipped varieties. These *Pinctada maxima* re found in Indonesia, Myanmar and Vietnam. Most *Pinctada maxima* used in these regions are now reared in hatcheries. The colour and quality of the pearls harvested can vary greatly and are often a function of each individual pearl farmer unique set of skills, experience and resources allocated to oysters breeding, seeding and management programs as well as the specificities of the farm site. Wild stocks are depleted.

Asian South Sea bead-cultured pearl. Typical size range: 9 mm – 16 mm, with rare examples of exceeding 20 mm. One bead cultured pearl per shell / operation

Asian South Sea non-bead-cultured (keshi) pearl. Typical size range: seed pearl sizes and upwards rare examples exceeding 10 mm. Asian South Sea natural pearl. Typical size range: seed pearl sizes and upwards, with rare examples exceeding 10 mm., natural pearls are found mostly amongst the Indonesian islands.

Pinctada margaritifera cummingi,

Tahitian Black-lipped pearl oyster

Adult size range: 10 cm – 20 cm. Source of black mother-of-pearl. Source of both natural and cultured pearls. Natural habitat includes coral reefs and atolls in the Central Pacific Ocean. Many found and known in French Polynesia. All *Pinctada margaritifera cummingi* oysters used for pearl culture are cultivated from spat in lagoons.

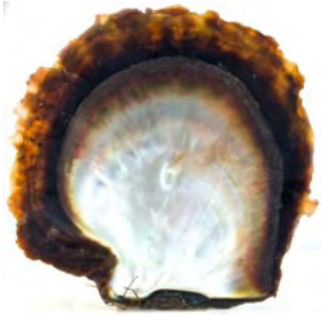
"Tahitian" bead-cultured Black pearl. Typical size range: 8 mm -15 mm, with 15-20 mm. considered large and only produced in small quantities, rare examples exceeding 20 mm, one bead cultured pearl per shell/operation.

"Tahitian" non-bead cultured (keshi) Black pearl. Typical size range: seed pearl size with rare examples exceeding 10 mm.

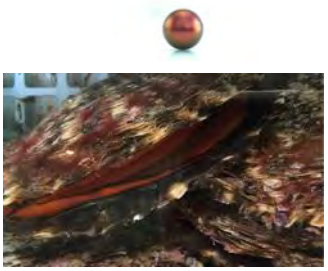
Natural Black pearl. Typical size range: from seed pearl size upwards but very rarely exceeding 10 mm.

Pinctada margaritifera typica

Fijian Pearl Oyster



Adult size range: 10 cm – 20 cm. Natural habitats are coral reefs surrounding larger mountainous islands of the Western Pacific Ocean. Requires a pristine and nutrient rich environment, typical of tropical climates that experience seasons of consistent rainfall, and display a high tolerance to suspended particle matter. Majority of Fijian cultured pearl production is from wild spat collection supplemented by hatchery production. This production is based around large sheltered bays on the larger mountainous islands, not atoll environments.



Bead Cultured Fiji pearls. Typical size range averages 10.0 – 13.0 mm with sizes exceeding 16 mm being rare. Predominantly have "earthy" tones with body colours such as gold, copper, burgundy, pistachio, pastel blue and chocolate.

Non-Bead Cultured Fiji pearls. Typical size range from seed sized to 8 mm.

Pinctada radiata

Gulf and/or Ceylon pearl oyster

Adult size range: 5 cm-7 cm. Historically a source of significant quantities of small natural pearls. Natural habitat is the Indian Ocean from Sri Lanka (Ceylon) to Persian/Arabian Gulf. In recent years cultured pearl farms for this species have been established in the UAE, Qatar and other parts of the Persian/Arabian Gulf.

Natural Gulf (Basra) or Ceylon pearl. Typical size range: 1 mm - 5 mm, with rare examples exceeding 8 mm.
Bead-and atypical-bead cultured pearl (relatively small production). Typical size range: 4 mm – 8 mm.
Non-bead-cultured (keshi) pearl (relatively small production). Typical size range: Seed pearl sized with some up to 4 mm.

Pinctada imbricata

Atlantic pearl oyster

Adult size range: 5 cm -7 cm. Source of natural pearls only. Ranges naturally in the Western Atlantic from Bermuda and Florida to South America.

Natural Venezuelan pearl. Typical size range: 2 mm – 6 mm with rare examples of up to 9 mm.

Pinctada fucata

Akoya pearl oyster

Japanese species*: Pinctada fucata (known in Japan as Pinctada martensii)*. It is sometimes considered a subspecies of *Pinctada imbricata* but now moving towards a species complex comprising *P. fucata/martensii/radiata/imbricata*.

Adult size range: 8 cm – 10 cm. Source of both natural and cultured pearls. Natural habitat is Japan to Pacific Ocean such as China and Vietnam. The Akoya pearl oyster has been used for pearl culturing for 120 years. For most of the 20th century Akoya cultured pearls were produced only in Japan, but now they are also produced in China and Vietnam.

Akoya bead-cultured pearl. Typical size range: 5 mm – 8 mm, with rare examples exceeding 9 mm.

Akoya non-bead-cultured (keshi) pearl. Typical size range: seed sized.

Akoya natural pearl. Typical size range: seed sized and up to 8mm.

Pinctada mazatlanica

Mexican black Lipped / La Paz pearl oyster

Adult size range: 10 cm -20 cm. Source of both natural and cultured (very limited production) pearls. Natural habitat is the Gulf of California (Mexico) to Peru.

New World natural pearl. Typical size range: 4 mm -14 mm. with exceptional specimens up to 20 mm.

New World bead and non-bead cultured black pearl. Typical size range: 4 mm - 12 mm with exceptional examples of up to 20 mm.

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Pinctada maculata

Pipi pearl oyster

Adult size range: 2 cm -6 cm. Source primarily of natural pearls. Ranges naturally in the Pacific Ocean particularly near French Polynesia and the Cook Islands.

Poe Pipi, or simply Pipi, natural pearls. May be found as blister or free (cyst) pearls and generally range in size from 1 to 4 mm, with exceptionally rare examples reaching 9 mm.

Pipi bead cultured blister pearls. Some bead cultured blisters have been noted in the Pipi pearl oyster but the production quantities are not presently available.

Pteria penguin

Black-winged pearl oyster

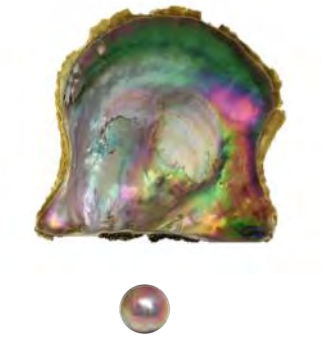
Adult size range: 8 cm – 25 cm.
Source of both natural and Hankei (or Mabé) cultured blisters.
Recently spherical pearl culturing started in The Philippines.
Natural habitat is from Amami Island (Japan) to Pacific Ocean and Indian Ocean. Known as mabe gai in Japan.

Mabé (Hankei) cultured blister. Typical size range: 13 mm -15 mm

Mabé Cultured pearl. Typical size range: 7 – 12 mm

Natural pearl. Typical size range: from seed pearl size upwards but very rarely exceeding 10 mm.

Pteria sterna



Rainbow lipped pearl oyster

Adult size range: 8 cm -14 cm. Source of both natural and cultured pearls. Ranges naturally in the eastern Pacific from Baja California to Peru.

New World black natural pearls. Typical size range: 3 mm – 6 mm, with rare examples of up to 11 mm.

Cortez Pearl ™ (bead cultured) Typical size range: 8 mm – 12 mm, with rare examples up to 17 mm.

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Saltwater Nacreous Univalves – Producers of nacreous natural and cultured pearls

Haliotis species

Green abalone and others

Adult size range: 7 cm – 20 cm. Source of both natural pearls and cultured blisters (sometimes referred to as "mabé"pearls). Ranges naturally from Southern California to Baja California (*H. fulgens, H. rufescens* and *H. cracherodi*) and in the waters off New Zealand (*H. iris*). Varieties of *Haliotis* are found in numerous countries around the world producing pearls in a wide range of colours: crème rosea, deep sea blue, seafoam green and aubergine.

Haliotis fulgens, green abalone, 7cm - 25cm, source of natural pearls, blue and green with coppery staining and fuchsia bursts, natural habitat from Southern California to Baja California, Mexico with 5- 7 open respiratory aperture holes in the shell for venting water from the gills.

Haliotis rufescens, red abalone, is the largest abalone species in the world reaching maximum size of 31 cm, natural habitat from British Columbia, Canada to Baja California, Mexico with 3 to 4 open respiratory aperture holes in the shell for venting water from the gills.

Haliotis iris, paua shell or rainbow abalone, is the largest abalone species in New Zealand, its natural habitat, reaching the maximum size of 18 cm, exhibiting deep metallic blue and green colors with respiratory aperture holes in the shell for venting water from the gills.

Natural abalone pearls may range in size from seed to exceptionally large horn-shaped examples that can reach 70 mm or more.

Abalone cultured blister pearls may range from 9 to 20 mm.

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Saltwater Non-nacreous molluscs – Producers of non-nacreous natural and cultured pearls

Lobatus gigas (also known as *Strombus gigas*)

Queen conch

Adult size range: 15 cm – 35 cm. This specie is regarded as commercially threatened due to over-fishing. Native to north and Central America all takes of Queen conch are prohibited in Florida and adjacent U.S. Federal waters.

May be found along the Atlantic coast from South Carolina to the Florida Keys, in the Caribbean and the Bahamas, at depths from 0.3 to 18 m. Juveniles may be found in inshore seagrass meadows and adults in deeper waters.

Natural Conch pearl. Typical size range: 3 mm – 8 mm with rare examples larger than13 mm.
Cultured conch pearl. Rare not presently commercial, typical size range: 3 mm – 8 mm.

Note: Protected species - see **Convention on International Trade in Endangered Species of Wild Fauna and Flora,** *Appendices I, II and III valid from 10 March 2016.* International Environment House • Chemin des Anémones • CH-1219 Châtelaine, Geneva, Switzerland, info@cites.org.

Tridacna species

Giant clam

Tridacna is a genus of large saltwater clams, marine bivalve molluscs in the subfamily *Tridacninae*, the giant clams. They have very heavy fluted shells. They inhabit shallow waters of coral reefs in warm seas of the Indo-Pacific region. *Tridacna gigas* is the most commonly known non-nacreous pearl producing giant clam but other members of the family including *Tridacna squamosa* may also produce pearls, some of an exceedingly large size. *Tridacna gigas* can weigh more than 225 kilograms and measure as much as 120 cm across.

Natural clam pearl. Typical size range: 3 mm – 140 mm but may appear much larger, particularly as blisters.

Note: Protected species - see **Convention on International Trade in Endangered Species of Wild Fauna and Flora,** *Appendices I, II and III valid from 10 March 2016.* International Environment House • Chemin des Anémones • CH-1219 Châtelaine, Geneva, Switzerland, info@cites.org.

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Triplofusus species

Florida horse conch

Triplofusus is a genus of small to very large saltwater univalves of which *Triplofusus giganteus* (also known as *Pleuroploca gigantea* or the Florida Horse Conch) is most commonly associated with horse conch pearls. This species shell length can reach 60 cm. The shell colour is bright orange in very young individuals. The shell often becomes greyish white to salmon-orange when adult.

Natural horse conch pearl. Typical size range: 3 mm – 10 mm and rarely up to 40 mm.

Mercenaria mercenaria

Hard shell clam

A natural saltwater pearl producing bivalve mollusc ranging from Eastern Canada to Florida with abundance between Cape Cod and New Jersey, otherwise known as hard shell clam, or quahog clam shell, pronounced “KO-hog”. It is a thick and heavy mollusc, generally oval in shape with varying degrees of purple, lilac and white margins. The natural pearls produced are non-nacreous with a porcelain like surface. Another “phenomenon” is the “eye effect” which is produced by a lighter colour in the center and darker colour on the circumference of the pearl. The colours of the mollusc range from white, lilac to deep purple. Adult size range: 5 cm – 7 cm. Source of natural pearls only.

Natural Quahog pearl. Typical size range: 3 mm – 8 mm

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Melo species

Melo (aethiopica, amphora - sometimes known as the 'baler shell' - broderipii, georginae and melo)

Adult size range: 15 cm – 40 cm. Source of natural pearls only. Natural range includes the Indian and Pacific Oceans off northern Australia.

Natural Melo pearl. Typical size range: 7 mm – 11 mm with rare examples up to 30 mm.

Nodipecten nodosus and N. subnodosus (the Lion's paw scallops)

Pearls from the Lion's Paw scallops

Adult size range: 7 cm – 18 cm. Source of natural pearls only. *N. nodosus* is found in the seas off the south-eastern USA to Brazil and *N. subnodosus* in the seas off western Central America at depths between 25 and 150 m. Together the shell colours are exceptional both in their variety and depth. There are three colour variants: white, lavender and orange, the outer surface of the shell may be several shades of brown, sometimes described as chocolate brown.

Natural scallop pearl. Typical size range: seed – 11 mm with rare examples exceeding this.

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Pinnidae family

Nacreous

Non-nacreous

Pearls from Pen shells

Pearls (whole and blister) from the *Pinnidae* family are known as 'pen or pinna pearls'; 'pen' being derived from the shells themselves which are of a similar shape to the historic quill or feather pens.

Shells of the *Pinnidae* family include the Atrina species, and the familiar *Pinna* species such as *Pinna nobilis*, *Atrina vexillum*, *Atrina fragilis*, *Atrina pectinata*, *Atrina maura*, *Pinna bicolour*, *Pinna muricata*, *Pinna rugosa*, *Pinna rudis* and *Pinna rugosa.* Pearls produced are mostly non-naceous however some are nacreous.

Widely distributed in the Indo-West Pacific, from southeastern Africa to Melanesia and New Zealand; north to Japan and south to New South Wales. Also in the Mediterranean, the Red Sea and the Arabian Gulf. Sizes are typically 10-60cm.
Natural pen pearl. Typical size range: seed – 11 mm with rare examples exceeding this.

Spondylus species

Pearls from the spiny or thorny oyster, or Chrysanthemum shells

Pearls from the *Spondylus species* are known for their distinctive flame structure which often has a blue sheen.

The many species of *Spondylus* are grouped in the same superfamily as the scallops. They are not closely related to true oysters; however, they do share some habits such as cementing themselves to rocks rather than attaching themselves by a byssus. The two halves of their shells are joined with a ball-and-socket type of hinge, rather than with a toothed hinge as is more common in other bivalves.

Widely distributed throughout the Indo-Pacific the Red Sea and the Mediterranean as well as the Americas.
Natural Spondylus pearl. Typical size range: 5 – 15 with rare example recorded up to 24 mm.

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Freshwater bivalves – producers of nacreous (sometimes non-nacreous) natural and cultured pearls

Hyriopsis cummingi

Triangleshell pearl mussel

Adult size range: 15 cm – 20 cm Freshwater mussel. Source of cultured pearls only. Ranges naturally in China and Vietnam, was imported into Japan and hybridized with the native *Hyriopsis schlegelii* currently used in Lake Kasumigaura.

Freshwater non-bead cultured pearl. Typical size range: 3 mm – 15 mm

Freshwater bead cultured pearl. Typical size range: 10 mm – 20 mm

Note: “soufflé” cultured pearls that may be considered as beaded prior to drilling may reach sizes as large as 40 mm.

Cristaria plicata

Cockscomb pearl mussel

Adult size range: 5 cm – 6 cm Source of cultured pearls only. Ranges naturally in Japan and China.

Cockscomb freshwater non-bead and bead cultured pearl. Typical size range: 3 mm – 5 mm

Important Note: Freshwater pearls are produced by various species of mussels including the Cristaria plicata, Hyriopsis cummingi, (above) Hyriopsis schlegelii and a hybrid of the Hyriopsis cummingi and Hyriopsis schlegelii mussels. Cristaria plicata and Hyriopsis cummingi are predominately used to culture freshwater pearls in China. Prior to the 1990s, Hyriopsis schlegelii was used to culture freshwater pearls in Lake Biwa Japan. Today a hybrid of the Chinese Hyriopsis cummingi and the Japanese Hyriopsis schlegelii are used in both China and Japan.

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Margaritifera margaritifera

European pearl mussel

Adult size range: 10 cm – 13 cm. Source of natural pearls only. Today, wild *Margaritifera margaritifera* pearl mussels are considered to be endangered and the fishing of these mussels is prohibited in most areas. Ranges naturally in Europe, northwest Asia, and north-eastern North America.

European freshwater pearl. Typical size range: 3 mm – 5 mm

Note: Protected species - see ***Convention on International Trade in Endangered Species of Wild Fauna and Flora,*** *Appendices I, II and III valid from 10 March 2016. International Environment House • Chemin des Anémones • CH-1219 Châtelaine, Geneva, Switzerland, info@cites.org*

Freshwater bivalves – producers of nacreous (sometimes non-nacreous) natural and cultured pearls from the USA

Threeridge Mussel from Tennessee, Amblema plicata, and its original natural pearl, half white and half pink with iridescence

Several freshwater molluscs with rivers and lake habitats in the USA produce natural and in some cases cultured pearls.

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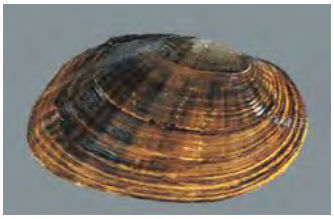
Ortmannania pectorosa

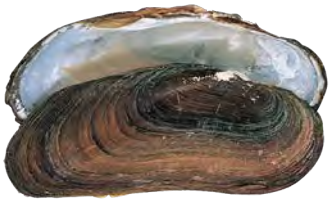


Ortmannania pectorosa or *O. ligamentina* (formally known as *Actinonaias pectorosa*) are natural pearl producing molluscs, otherwise known the Pheasant Shell and the Cumberland Mucket. It is a large roughly elliptical, thick-shelled mussel approximately 14-15 cm. The nacre may be bluish to creamy or silvery white with iridescence along the margins. This species is found in the Elk river and Tennessee and Cumberland river basins.

Amblema plicata

Amblema plicata is a natural pearl producing mollusc, otherwise known as the three-ridge mussel, blue-point, purple-tip, or fluter. Nacre is pearly white, with iridescent margins often with pink or purple tint. *Amblema plicata* live in small to large rivers and impoundments. Image adapted from Dick Biggins Us Fish and Wild Life Service

Cumberlandia monodonta



Cumberlandia monodonta is a natural pearl producing mollusc, otherwise known spectacle case. It is an elongated shell, usually pinched in the middle, dark brown to black. Nacre is white, iridescent. Largest length is up to 17 cm. It lives in large rivers with swiftly flowing water. Image adapted from Jim Rathert, Missouri Department of Conservation.

Cyclonaias tuberculata

Cyclonaias tuberculata is a natural pearl producing mollusc, otherwise known as the purple wartyback, Missouri maple leaf, purple pimpleback, or deer horn. It has a rounded shell with a fairly prominent wing, beak covered with fine wavy sculpturing with large specimens at 13 cm. The nacre is usually evenly deep purple with iridescent margin, or occasionally white with a purple tinge. *Cyclonaias tuberculata* lives in medium to large rivers.

Cyrtonaias tampicoensis

Cyrtonaias tampicoensis or the *Tampico* pearly mussel is a natural pearl producing mollusc, has no significant external shell sculpturing and may reach over 130 mm in shell length. Colouration varies from yellowish-brown to dark brown and black. Internally, nacre is typically purple, but may be multi coloured. Pearls are the same colours as the nacre and are known in the trade as Concho pearls. Their habitat ranges from relatively small streams to large reservoirs in Texas USA. CITES Appendix 1 listed.

Ellipsaria lineolata

Ellipsaria lineolata is a natural pearl producing mollusc, otherwise known as the butterfly mussel. It has a triangular, flattened shell, sharply angled posterior ridge, yellowish brown, with broken brown rays, the nacre is white, silvery white and iridescent. *Ellipsaria lineolata* live in large rivers and the largest length range from 7 to 10 cm. Photo adapted from usfwsmtnprairie 6473796147

Elliptio crassidens

Elliptio crassidens is a natural pearl producing mollusc, otherwise known as the elephant-ear, mule's ear, or blue ham. It is a heavy, solid, and elongated shell. The nacre colour is variable, usually purple or occasionally pink or white. *Elliptio crassidens* live in large river and range in largest length from 14 to 15 cm.

Megalonaias nervosa

Megalonaias nervosa is a natural pearl producing mollusc, otherwise known as the washboard mussel. It is a thick and solid rhomboid mollusc and maximum length approximately 25 cm. The nacre colour is white with hints of pink and salmon at the margin. Megalonaias nervosa is widespread throughout the USA. The majority of beads used for producing bead cultured pearls are produced from *Megalonaias nervosa*. In the late 20th century, freshwater cultured pearls and cultured blisters were grown in this shell in Birdsong Creek in Lake Kentucky.

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CLASSIFYING NATURAL PEARLS from *Akoya complex*

The characteristics of natural pearls

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All *Akoya complex* natural pearls are classified according to five characteristics known as The Five Virtues: Lustre, Colour[2], Surface Appearance, Shape and Size.

However, given their rareness in comparison with cultured pearls it should be noted that these natural pearls are not critiqued in these classification characteristics as severely as cultured pearls might be.

Lustre and colour characteristics may not be assessed if treatments that impact these virtues are applied.

[2] In general, the **colour** of nacreous natural pearls may be described in terms of a combination of '**body colour'**; (the dominant, overall colour of the pearl), '**overtone**' (the presence of an additional colour on a natural pearl, usually pink, gold, green, or blue) and '**orient'** (an optical phenomenon caused by the interference and diffraction of light from within the surface of some nacreous natural pearls producing delicate shades of iridescent colours).

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LUSTRE

Lustre is the appearance or the brilliance of the pearl in reflected light. It is judged by the sharpness of the reflection of a light source seen on the surface of the pearl. Lustre may range from dull to very bright.

TERMINOLOGY:

Natural Lustre

Excellent
Good
Fair
Dull

Excellent

Reflections are bright, sharp and distinct

Good

Reflections are bright, but not sharp

Fair

Reflections are weak, hazy and blurred

Dull

Reflections are dim and diffused, or no reflection is apparent

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Nacreous natural pearls from the *Pinctada akoya complex* have a wide selection of colours that may have other traditional and distinctive local names

COLOUR

UNTREATED NACREOUS NATURAL PEARLS

All colours may be with or without overtone and / or orient

GOLDEN TO WHITE WITH CREAM VARIATIONS

Palette 1 – other body colour or tone variations exist within this palette and will be added when appropriate

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GREY'S AND OTHER COLOUR VARIANTS


BLACK


DARK GREY


SILVER


LIGHT SILVER


PURPLISH GREY


PURPLISH SILVER


PINKISH GREY


PINKISH SILVER


PURPLE


BLUE


BROWN


LIGHT BROWN


RED


PINK

Palette 2 – other body colour or tone variations exist within this palette and will be added when appropriate

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SURFACE APPEARANCE

Classification

Clean: pearls are blemish-free containing minute surface characteristics that are very difficult to see by trained observers with the naked eye.
Lightly blemished (Slightly spotted): pearl show minor surface irregularities when examined by a trained observer.
Moderately blemished (Moderately spotted): pearl show noticeable surface characteristics.
Heavily blemished (Heavily spotted): pearls show obvious surface irregularities that might affect durability.

Note: Visible flaws away from drill holes affect surface appearance grades more than those near the holes.

Pearl Blemishes:

- Bumps and welts.
- Discolorations: spotty areas often caused from concentrations of conchiolin.
- Chips, Holes, and Patches of Missing Nacre.
- Wrinkles: an irregular ridge of crease on the surface.
- Pits and pinpoints.
- Dimples.
- Dull Spot: area of very low lustre due to variations in nacre quality or contact with chemicals.
- Cracks.
- Scratches.
- Indentations.

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SHAPE

DEFINITIONS:

Round
Externally they shall be round to the eyes - they should roll easily across a flat surface in a straight or nearly straight line, any difference in dimensions shall be =/<5% of the minimum dimension.

Partial-round
Externally they shall look off-round (nearly round) to the eyes - when rolled across a flat surface they will almost travel in a straight line, the difference in dimensions shall be >5% of the minimum dimension.

Button
Externally one side is flat or near flat when viewed in profile, may be low or high domed. Should be able to stand motionless when flat or near flat side is down on a flat surface.

Oval
Externally they must be round/rounded in cross-section (i.e. down their length) and usually elongated. However, shorter examples can also be found as it is difficult to classify the shorter examples under any of the other shapes.

Drop
Externally they must be round/rounded in cross-section (i.e. down their length) and usually elongated with one end narrower than the other. However, shorter examples can also be found as it is difficult to classify the shorter examples under any of the other shapes.

Baroque
Pearls that are asymmetrical to a lesser or greater degree; are irregularly in shape.

Doubled
Two pearls that have grown together as one.

Clustered
Several pearls that have grown together as one.

Blister pearl
a natural pearl that has perforated the mantle of the mollusc and has naturally adhered, through layers of nacreous or non-nacreous secretions applied by the mollusc, to the inner wall of the shell. The subsequently formed layers of nacreous or non-nacreous material are continuous with those of the inner wall of the shell. They are round or irregular in shape.

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Shape - examples

Round and Partial Round

Shape - **Round**

Shape – **Partial-Round**

Button

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Partial button

Circlé button

Oval

Partial oval

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Circlé oval

Drop

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Double drop

Circlé drop

Doubled

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Clustered

Baroque

Partial baroque

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Weight and Size

Graduated sieves sort the natural pearls into different sizes from the large to the smallest pearls. *Akoya complex* pearls are often sold by Chaw (volume) and Methgal.

The international norm for recording the weight of a natural pearl is the "**pearl grain**" - 1 pearl grain = 0.25 ct

International comparative weights

Weights

Carat (ct)	➢ 1 ct = 0.2 grams
Chaw	➢ carat x carat x 0.6518 *(mainly used in the Persian/Arabian Gulf and India)*
Methgal	➢ 4.5 grams *(mainly used in the Persian/Arabian Gulf and India for seed pearls)*
Liang	➢ 1 liang = 250 ct = 50 grams *(mainly used in China)*

Weight / price calculation

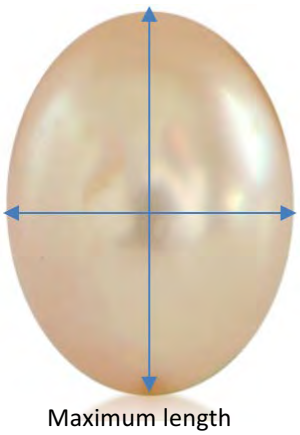
"Once-the-weight" natural pearls are not priced at 'so much per grain' but by an elaborate method using base price referred to as the 'unit base price'. The value is arrived at by a simple squaring of the weight of an individual pearl in grains and multiplying the result by the base (unit) price.

➢ grains x grains *(unit e.g., one shilling)* -

Measurements

Pearl measurements are generally recorded in millimetres, occasionally they are recorded in centimetres. Whichever is used the numerical values are given to only two places of decimal e.g., 22.33 mm or cm.

In each instance, the minimum and maximum diameters are recorded along with the maximum length.



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SALTWATER AND FRESHWATER CULTURED PEARL MARKET LEADER TYPES

The following explores the species, origin, characteristics and production of five market leaders in cultured pearl types and three others with interesting characteristics.

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Australian South Sea pearl oyster & Australian South Sea Cultured pearl

Species

Pinctada maxima – Primarily white, silver with some gold-lipped oyster varieties.

Origin

Wild *Pinctada maxima* oysters are found in abundance only in an isolated region off northern Australia.

Shell Characteristics

- Largest and most valuable of all pearl oysters.
- Traditionally known as the "King of pearl oysters" because of its large size.
- Typical adult size range: 20 cm – 30 cm.
- Australian oysters are predominantly of the silver-lipped variety but also include some of the gold-lipped variety.
- Require pristine marine conditions and abundant plankton to thrive.
- Live mainly in deep water, and do not thrive on coral reefs.
- The majority of Australian South Sea cultured pearl production comes from wild oysters caught by divers. Some oysters are now produced in hatcheries to supplement and protect the wild stocks.
- The mother-of-pearl from this species is the finest quality, thickest and most valuable of any oyster and supplies 75% of the world's demand for the manufacture of high value mother-of-pearl products such as watch faces and jewellery.

Cultured (beaded and non-beaded) Pearl Characteristics

- Largest, finest, and most valuable of all white cultured pearls.
- Comparably (usually) very thick nacre for any bead-cultured oceanic pearl.
- Natural lustre includes high transparency and colour overtone known as 'orient'.
- Wide variety of shapes such as drop, oval, round, baroque, and button.
- Predominantly produces white and silver cultured pearls but natural colours range from white to gold with pink, blue, and green overtones.
- No treatment required for fine quality Australian South Sea Cultured Pearls but for lower qualities maeshori treatments are applied.
- Typically, 11 mm-16 mm in diameter with rare examples exceeding 20 mm.

Production

- 1 bead cultured pearl per oyster every 2-3 years.
- Estimated production is approximately 800,000 cultured pearls per annum.
- Wild oysters account for approximately 70% of the production.
- Retail value of world production: Approximately US$300million per annum

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Philippine South Sea pearl oyster & Philippine South Sea Cultured pearl

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Species

Pinctada maxima

Origin

Both wild and hatchery-bred oysters can be found in the Philippines.

Shell Characteristics

- Largest and most valuable of all pearl oysters.
- Traditionally known as the “King of pearl oysters”.
- Typical adult size range: 20 cm – 30 cm.
- Philippine oysters are predominantly of the gold-lipped variety but also include silver-lipped.
- Require pristine marine conditions and abundant plankton to live.
- Wild stocks of pearl oysters are partially depleted. Most *Pinctada maxima* oysters used for pearl culture in this region are reared in hatcheries.
- Live mainly in deep water and do not thrive on coral reefs.

Cultured (beaded and non-beaded) Pearl Characteristics

- Largest, finest and most valuable of all cultured pearls.
- Comparably (usually) very thick nacre for any beaded cultured oceanic pearl.
- Natural lustre includes high transparency and colour overtone known as ‘orient’.
- Rarest colour (golden) of South Sea Cultured Pearls.
- Wide variety of shapes such as drop, oval, round, baroque and button.
- Host oysters are predominantly hatchery-bred.
- Predominantly produces champagne to gold cultured pearls but natural colours range from white to gold with different overtones.
- Typically, 9 mm – 16 mm diameter in size with rare examples exceeding 20mm.

Production

- 1 bead cultured pearl per oyster every 2-3 years.
- Estimated production is approximately 1 million cultured pearls per annum.
- Retail value of world production: Approximately US$ 230 million per annum.

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Asian South Sea pearl oyster & Asian South Sea Cultured pearl

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Species

Pinctada maxima

Origin

These oysters are produced off Indonesia, Burma (Myanmar) and Vietnam.

Shell Characteristics

- Typical adult size range: 20 cm – 30 cm.
- A mixture of silver and gold-lipped varieties.
- Require pristine marine conditions to survive and thrive.
- Wild stocks of pearl oysters in these regions have been largely depleted.
- All *Pinctada maxima* oysters used for pearl culture in these regions are now reared in hatcheries.
- Fine quality mother-of-pearl but due to insufficient thickness and yellow colour makes it less desirable for many commercial purposes.

Cultured (beaded and non-beaded) Pearl Characteristics

- Predominantly cream to gold coloured cultured pearls.
- Host oysters are grown in bays and open ocean from hatchery-reared spat.
- No treatment-required for the most valuable fine quality cultured pearls.
- Typically, 8 mm – 13 mm diameter in size with rare examples exceeding 16 mm. Due to their biogenic nature all pearls and cultured pearls are known to change their colour appearance over time. A wide variety of shapes such as drop, oval, round, baroque, circlé and button.

Production

- 1 cultured pearl per oyster every 1-2 years.
- Estimated production is approximately 3 million cultured pearls per annum.
- Retail value of world production: Approximately US$ 230 million per annum.

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Tahitian Black-lipped pearl oyster & Tahitian Black Cultured Pearl

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Species

Pinctada margaritifera cummingi

Origin

Tahiti, French Polynesia, but also reported in Okinawa (Japan), Cook Islands and other Pacific islands.

Shell Characteristics

- Typical adult size range: 10 cm – 20 cm.
- Require pristine marine conditions to survive and thrive.
- Natural habitat includes coral reefs in the Central Pacific Ocean. Mainly found in French Polynesia. All *Pinctada margaritifera* oysters used for pearl culture are cultivated from spat in lagoons.
- Thrives in coral reef and atoll environments.
- This species of pearl oyster has valuable fine quality black mother-of-pearl in a wide range of colour and overtones including black, green, silver, blue and rosé.
- Mother-of-Pearl from this species is valuable for inlay and button manufacturer.

Cultured (beaded and non-beaded) Pearl Characteristics

- Predominant variety of marine black pearl.
- Natural colours may range from white to black including peacock, green, cherry, aubergine, blue, pistachio, gold, silver and red overtones.
- No treatment is required for fine quality Tahitian black cultured pearls.
- Typically, 4 mm -15 mm in diameter 15-20 mm is considered an important range but production is low, with rare example exceeding 20 mm.
- Produces the largest of all black cultured pearls. Wide variety of shapes such as drop, oval, round, baroque, button and circlé.

Production

- 1 bead cultured pearl per oyster every 2 years.
- Oysters are grown from spat collected in spat-collectors in a natural environment.
- Estimated production is approximately 8 million cultured pearls per annum.
- Retail value of world production: Approximately US$ 230 million per annum.

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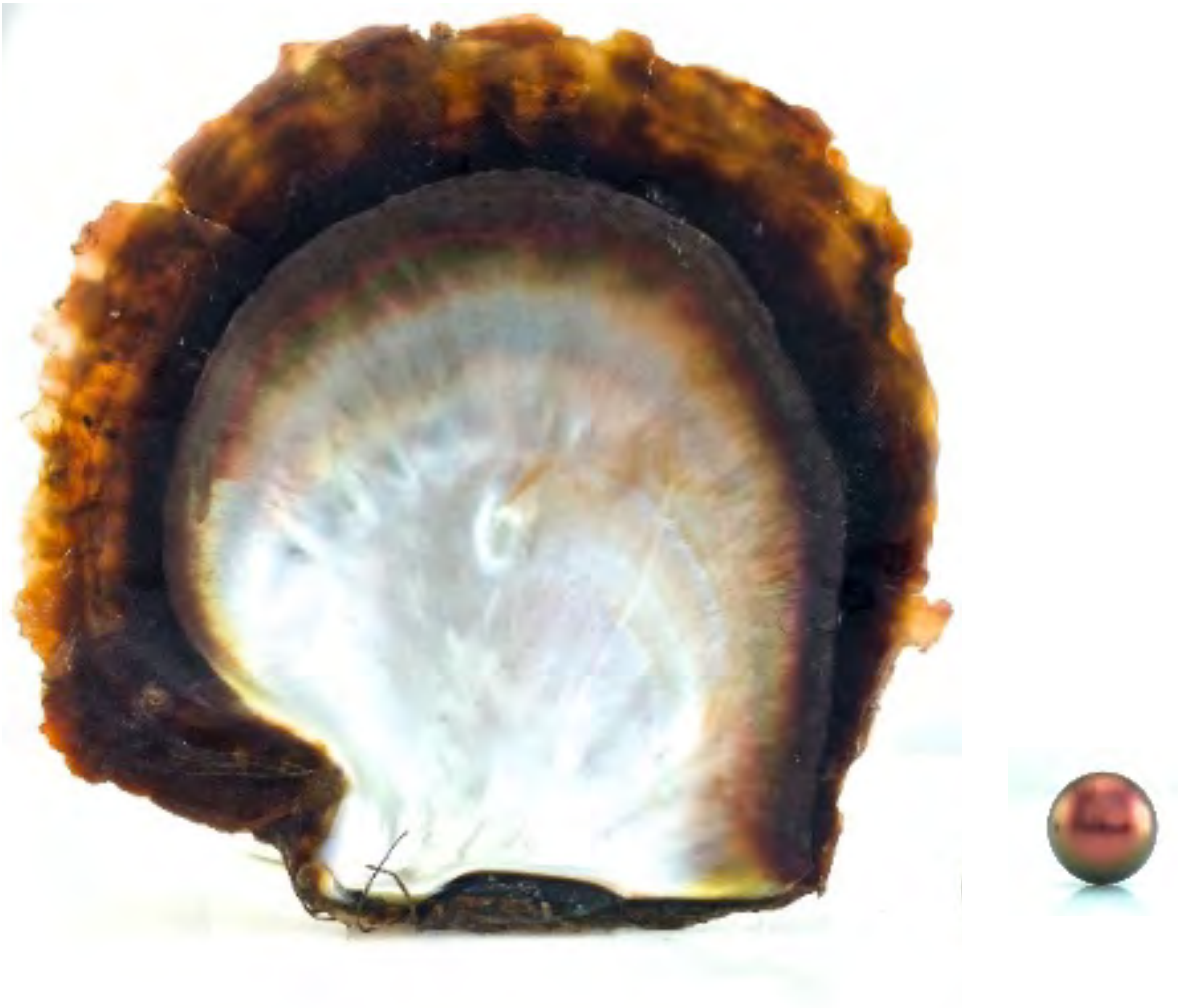
Fijian pearl oyster & Fiji cultured pearl



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Species

Pinctada margaritifera typica

Origin

Islands of Western Pacific Ocean

Shell Characteristics

- Adult size range: 10 cm – 20 cm.
- Natural habitat is coral reefs surrounding larger mountainous islands of the Western Pacific Ocean.
- Require a pristine and nutrient rich environment, typical of tropical climates that experience seasons of consistent rainfall, and display a high tolerance to suspended particle matter.
- Majority of Fiji cultured pearl production is from wild spat collection and hatchery production. This production is based around large sheltered bays on the larger mountainous islands, not atoll environments.
- Oyster exhibits a unique soft body colour with its predominantly bright orange mantle[3].
- The mother-of-pearl from this species display a range of rare "earth tones". Not always sought after by commercial mother-of-pearl processors.

Cultured (beaded and non-beaded) Pearl Characteristics

- Cultured saltwater pearls with a unique spectrum of natural colours produced in the world today. Predominantly rare "earthy" tones with body colours such as gold, copper, burgundy, pistachio, pastel blue and chocolate.
- Fiji cultured pearls also display strong to subtle overtones of pink, gold, copper, bright green, blue and violet colours. Also, common to find cultured pearls with more than 2-3 overtones, particularly with circlé cultured pearls and baroque-shaped cultured pearls.
- Thick nacre is testament to the high lustre and iridescence of the Fiji cultured Pearl.
- Cultured pearls are produced in a wide variety of shapes such as round, semi-baroque (drop, oval, button), circlé, baroque and non-beaded (keshi).
- Size from first seeding averages 10 – 11 mm with reseed average size from 11.5 – 13 mm. Size exceeding 16 mm are rare.
- No colour treatment performed on any Fiji cultured pearls.

Production

- 1 cultured pearl per oyster produced every 1-2 years with an average result of 1 saleable pearl out of every 4 oysters seeded.
- Limited production due to rarity of oysters with a maximum of 50,000 cultured pearls per annum.
- Due to their rarity and uniqueness of colours Fiji Pearls command a high value per carat/momme of any cultured pearl.

[3] the mantle is an organ found in molluscs. It is the dorsal body wall covering the main body, or visceral mass. The outer epidermis (surface towards the shell) of this organ secretes calcium carbonate to create a shell.

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Mexican Black-lipped / La Paz Pearl Oyster & New World Cultured Black Pearl

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Species

Pinctada mazatlanica

Origin

Mexico, Panama, Costa Rica and Peru.

Shell Characteristics

- Typical Adult size: 10-20 cm.
- Requires rich, productive marine conditions to live and thrive.
- The natural habitat of this species includes rocky reefs associated with the *Porites spp*. incrusting sponge, and can be found at depths between 10 cm to 20 meters.
- This species of pearl oyster has valuable fine quality mother-of-pearl in a wide variety of colours and overtones including grey, black, green, violet and golden. Potential for those looking for unique mother-of-pearl items.

Cultured Pearl Characteristics

- A very rare variety of cultured black pearl.
- Natural colours range from white to black, including “peacock” green or violet overtones.
- No treatment is performed on New World black cultured pearls.
- Cultured pearls range in size from 7 to 9 mm.
- Shapes range from baroque to semi-baroque, rounds are exceedingly rare.

Production

- 1 cultured pearl per oyster. No re-seeding done.
- Oysters are grown from wild-caught spat.
- Production is less than 100 cultured pearls per annum.
- Retail value of world production is less than US$ 10,000 per annum.

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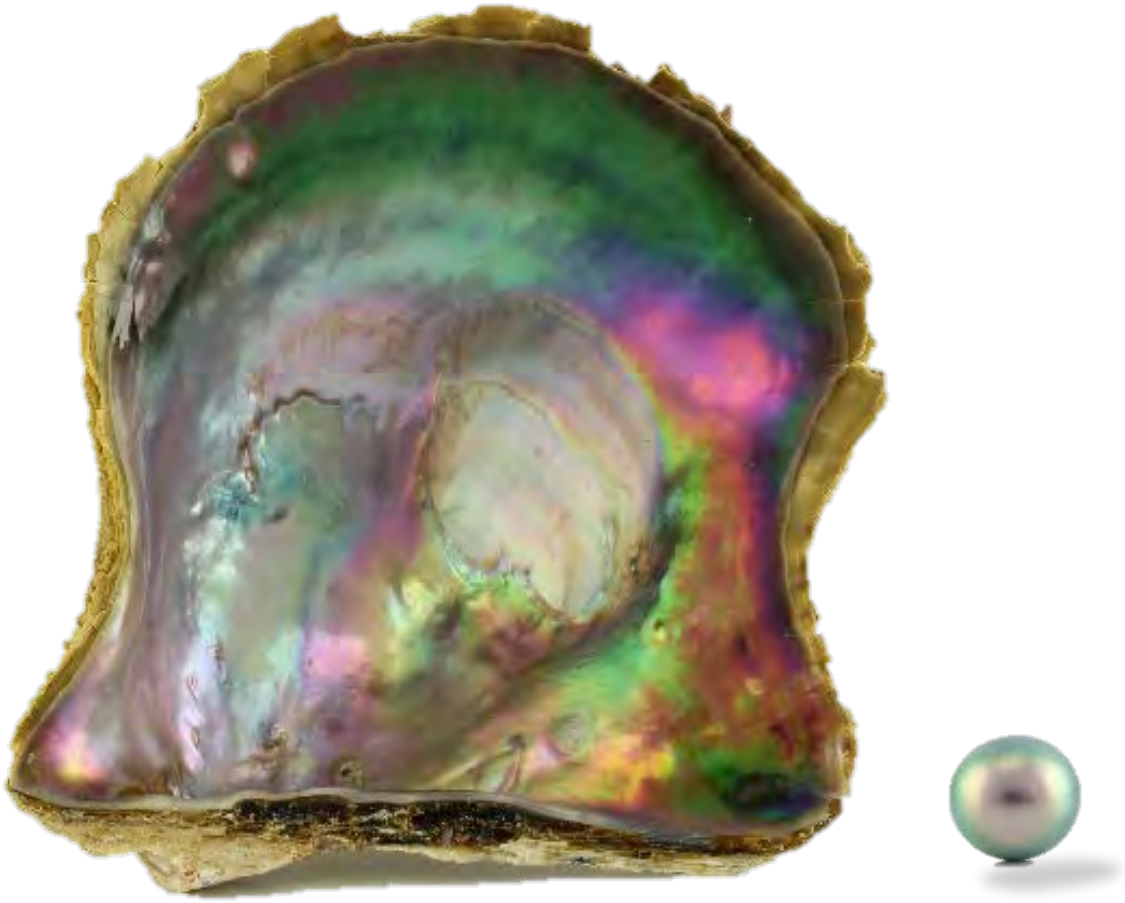
Rainbow Lipped Pearl Oyster & Cortez Cultured Pearl (Cortez Pearl™)



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Species

Pteria sterna

Origin

Ranges naturally in the Eastern Pacific from Baja California to Peru.

Shell Characteristics

- Requires rich, productive marine conditions to live and thrive.
- The natural habitat of this species includes rocky reefs and can be found associated with Gorgonian corals or forming large clusters of pearl oysters ("macollos") on sandy bottom at depths between 6 to 30 meters.
- This species of pearl oyster has valuable but thin-quality mother-of-pearl in a wide variety of colours and overtones including white, grey, black, green, purple, violet and golden.

Cultured Pearl Characteristics

- A very rare variety of cultured pearl.
- Only cultured pearl produced in a *Pteria* species of pearl oyster.
- Natural colours range from white to black, including peacock green, golden, blue, purple or violet overtones. Overtones may dramatically show up to 3 different colours.
- No treatment (colour nor lustre).
- Cortez Pearls™ are found listed in the Fair Trade Gems list.
- Cultured pearls range in size from 8 to 12 mm. Extremely rare pearls reach 14 and even 17 mm.
- Shapes range from round to near-round, baroque, button, oval and drop, only 2% are round-shaped, and 30% semi-baroque, and the other percentage are baroque.
- Cultured pearls glow pink-red under Long Wave Ultraviolet light, a distinctive trait.
- Thick nacre allows for the high natural lustre and extreme iridescence of the Cortez cultured Pearl.
- Cortez cultured pearls are produced in a wide variety of shapes such as semi-baroque (drop, oval, button), circlé, baroque, with perfectly round pearls representing less than 2% of a yearly harvest. Cortez Mabé cultured blisters and non-bead cultured (keshi) pearls are also available in limited quantities.

Production

- One bead cultured pearl per oyster. No re-seeding done.
- Oysters are grown from wild-caught spat.
- Production is steady at around 4,000 cultured pearls per annum.
- Retail value of world production is estimated at US$ 2.4 million per annum.

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Akoya pearl oyster & Akoya cultured pearl

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Species

Pinctada fucata/ Pinctada fucata martensii (Japan)

Origin

Previously produced solely in Japan, but now also produced in China and Vietnam.

Shell Characteristics

- Typical adult size range: 5 cm – 10 cm
- Japanese oysters possess specific lustre and colour in the shell nacre formed through four seasons.
- New type of red tide (1992 and 1997 in Ago Bay), and infectious disease have resulted in a significant decline in the Japanese cultured pearl industry.
- Most of mother oysters are hatchery bred. They are cultured from 2 to 3 years until bead inserting operation.

Cultured (beaded and non-beaded) Pearl Characteristics

- Known as the original cultured round pearl since 1906. Akoya oysters introduced the classic round cultured pearls to the world.
- Many Akoya cultured pearls are routinely enhanced for lustre and continuity of colour. The shapes include round, near-round, baroque, and semi-baroque.
- Most of mother oysters are hatchery bred.
- Cultured pearls have specific colour and lustre.
- Typically, 2 mm – 9 mm in diameter with rare examples exceeding 10mm.

Production

- Many cultured pearls are produced with culturing period within one year, some pearls are cultured for two to three years.
- Rough production amounts are 22.5 tons for Japanese Akoya, 2.4 tons for Chinese and 2.6 tons for Vietnamese Akoya.
- Retail value of world production: US$ 130 million per annum.

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Freshwater pearl mussel & Freshwater cultured pearl

Species

Freshwater pearls are produced by various species of mussels including the *Cristaria plicata, Hyriopsis cummingi*, *Hyriopsis schlegelii* and a hybrid of the *Hyriopsis cummingi* and *Hyriopsis schlegelii* mussels. *Cristaria plicata* and *Hyriopsis cummingi* are predominately used to culture freshwater pearls in China. Prior to the 1990s, Hyriopsis schlegelii was used to culture freshwater pearls in Lake Biwa Japan. Today a hybrid of the Chinese *Hyriopsis cummingi* and the Japanese *Hyriopsis schlegelii* are used in both China and Japan.

Origin

Produced predominately in the Zhejiang, Hubei, Hunan, Anhui, Jiangsu and Jiangxi provinces of China.

Shell Characteristics

- Adult size range: 30 cm.
- Produced in freshwater lakes and ponds.
- Intensive farming methods requiring the addition of phosphates to feed the mussels are causing environmental problems including severe pollution of water tables in some areas of China.
- The shell of these species displays very little lustre and have no ornamental value.

Pearl Characteristics

- ***Cristaria plicata***
- Cultured pearls produced are mostly small with wrinkled surfaces, often referred to as rice Krispy pearls in the trade.
- Colours are predominately white, cream and light pink.
- Individual shells are capable of producing as many as 50 cultured pearls from 25 grafts in each valve.
- ***Hyriopsis cummingi* and *Hyriopsis schlegelii***
- Cultured pearls produced are mostly off-round to baroque, with less than 1/10 of one percent achieving a shape with less than 2 percent deviation from a perfect sphere.
- Typical sizes range from 5 mm to 10 mm, with extremes from 2 mm to 15 mm.
- Typical natural colours are white, pink, orange, cream, violet and mauve. Rarely produced colours include yellow, dark purple and green.
- Individual shells are capable of producing as many as 32 cultured pearls from 16 grafts in each valve.
- **Hybrid of *Hyriopsis cummingi* and *Hyriopsis schlegelii***
- The hybrid shell is predominately used for beaded freshwater cultured pearl production in China and Japan.
- Hybrid shell use has been steadily increasing in China since the turn of the century. A wider space between the valves at the hinge enables large bead cultured pearl production. Hybrid shells exhibit strong heterosis and produce cultured pearls with more intense colours than non-hybrid shells.
- Cultured pearls produced in hybrid shells often exhibit dark natural colours and natural metallic lustre, characteristics rarely seen in non-hybrid production.
- **Beaded Freshwater Cultured Pearls** (Pearls cultured in freshwater mussels by inserting a foreign substance into an existing pearl sac in the mantle of a host freshwater mussel, or inserting a bead and donor mantle tissue into the gonad of a host freshwater mussel).
- Produced predominately in the Zhejiang, Hubei, Hunan, Anhui, Jiangsu and Jiangxi provinces of China, with limited production at Lake Kasumigaura in Japan.
- Trade names of beaded freshwater cultured pearls include: coin, fireball, nuclear, Edison, Ming and soufflé cultured pearls (Soufflé cultured pearls' nuclei are non-solids and are removed after drilling, leaving a hollow cavity within the cultured pearls).
- Beaded cultured pearls produced in *Hyriopsis cummingi* are grown in the mantle and are most often coin or baroque shapes.
- Typical sizes range from 5 mm to 15 mm, with extremes from 3 mm to 25 mm.
- Typical natural colours are white, pink, orange, cream, violet and mauve. Rarely produced colours include yellow, dark purple and green.
- Beaded cultured pearls produced in the hybrid shell are grown either in the host mantle or gonad.
- Typical sizes range from 10 mm to 20 mm, with extremes as large as 40 mm.
- Freshwater cultured pearls produced often exhibit dark natural colours and natural metallic lustre.

Production

- Between 30 and 50 cultured pearls may be produced per mussel at one time.
- Approximately 1000-1500 tonnes (800 million to 1 billion pearls) per annum.
- Retail value of world production: US $ 400million per annum.

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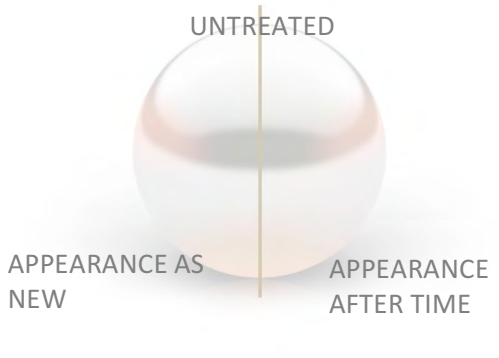
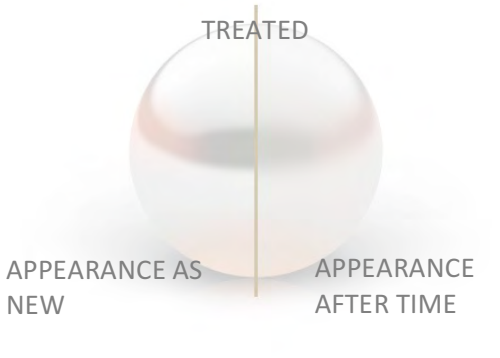
NATURAL COLOUR AND LUSTRE VS. TREATED COLOUR AND LUSTRE FOR CULTURED PEARLS

Natural pearls and cultured pearls may have been treated to improve the appearance of colour and lustre.





UNTREATED PEARLS

Pearls with natural colour and lustre.

Fine quality pearls have attractive colour and excellent lustre from the moment they are taken from the mother oyster. Such pearls require no lustre or colour enhancement prior to setting as jewellery.

Fine quality pearls with long-lasting natural beauty that require no enhancement are exceedingly rare and highly prized and this is reflected in their value.

Note that normal buffing or normal polishing is not considered to be a treatment.

TREATED PEARLS

Pearls that have been subjected to treatments to remove blemishes or to change the pearls colour or improve the pearl's lustre to achieve a desired appearance.

Various treatments are commonly applied to lower quality pearls to improve their appearance to make them suitable for use in jewellery, creating a more affordable and accessible product for a wider market.

Techniques involving light chemical treatments may improve the appearance of lower quality pearls. The improved lustre resulting from such treatments generally fades over time, but this does not damage the pearl's structure. Heavy chemical treatments may adversely affect the pearl's structure and can sometimes impart a coarse and chalky look and feel over time.

Some treatments are difficult to detect and consumers should request a guarantee of natural colour and lustre for pearls of high value.

CLASSIFYING CULTURED PEARLS

The characteristics of pearl quality

All nacreous cultured pearls are graded according to five characteristics known as The Five Virtues:
Lustre, Colour, Surface Appearance, Shape, and Size.

LUSTRE | COLOUR | SURFACE APPEARANCE | SHAPE | SIZE

Lustre and colour classifications[1] are assessed differently when comparing treated and untreated cultured pearls i.e. natural colour and lustre versus treated colour and lustre.

Surface, shape and size grades are the same for treated and untreated pearls.

[1] In general the **colour** of nacreous cultured pearls may be described in terms of a combination of '**body colour'** (the dominant, overall colour of the cultured pearl) '**overtone**' (the presence of an additional colour on a cultured pearl, usually pink, gold, green, or blue) and '**orient'** (an optical phenomenon caused by the interference and diffraction of light from within the surface of some nacreous cultured pearls producing delicate shades of iridescent colours).

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LUSTRE

UNTREATED CULTURED PEARLS	TREATED CULTURED PEARLS
Natural Lustre	Treated Lustre
Excellent	Excellent Treated
Good	Good Treated
Fair	Fair Treated
Dull	Dull Treated

Excellent

Reflections are bright, sharp and distinct

Good

Reflections are bright, but not sharp

Fair

Reflections are weak, hazy and blurred

Dull

Reflections are dim and diffused, or no reflection is apparent

Please note: Non-nacreous cultured pearls (the only grown variety presently being the experimental cultured Conch pearl) have a different compositional arrangement to nacreous cultured pearls. Their appearance is porcelaneous rather than nacreous, and they do not display lustre in the traditional sense. Non-nacreous pearls are instead assessed by the presence or absence of a shimmering, flame-like effect.

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COLOUR

UNTREATED CULTURED PEARLS

Natural colour

Champagne
Cream
Gold
Peacock
Blue
Green
Cherry
Pistachio
Aubergine
White Pink
Silver Pink
White
Silver

TREATED CULTURED PEARLS

Treated Colour

Champagne Treated
Cream treated
Gold Treated
Peacock Treated
Blue Treated
Green Treated
Cherry Treated
Pistachio Treated
Aubergine Treated
White Pink Treated
Silver Pink Treated
White Treated
Silver Treated

WHITE PINK SILVER CHAMPAGNE GOLD BLACK

Cultured pearls with desirable natural colour are rarely colour treated. Cultured Pearls with natural colour are more valuable than artificially coloured cultured pearls.

Cultured pearls with less desirable or unpopular colours are often bleached to remove the original colour. Dyes, heat or other colouring techniques are then used to improve the pearl's colour. Cultured pearls are often artificially coloured to allow colour matching in pearl strands. Artificial colours may fade over time.

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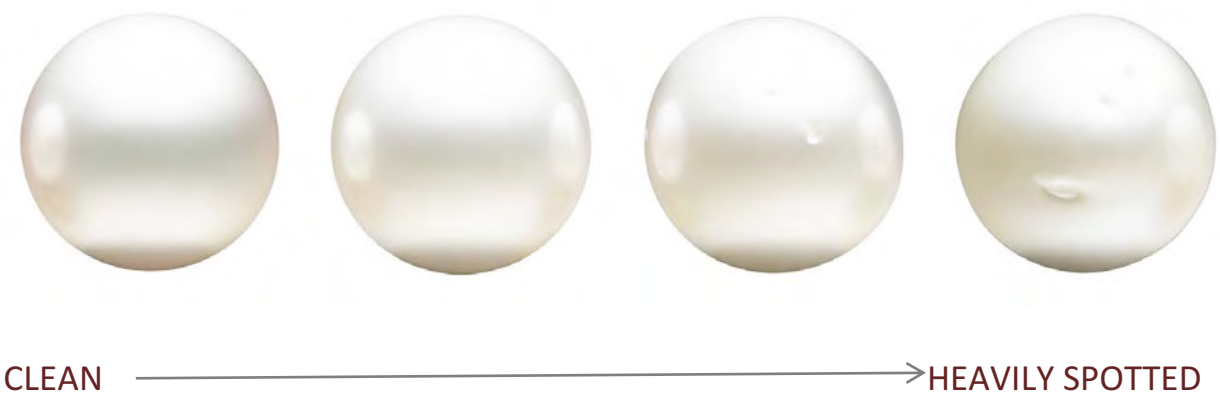
SURFACE APPEARANCE

The same surface classifications apply to both treated and untreated cultured pearls.



Clean
Flawless surface

Slightly spotted
Slight imperfections

Moderately spotted
Obvious imperfections

Heavily spotted
Imperfections that significantly detract from the beauty of a cultured pearl

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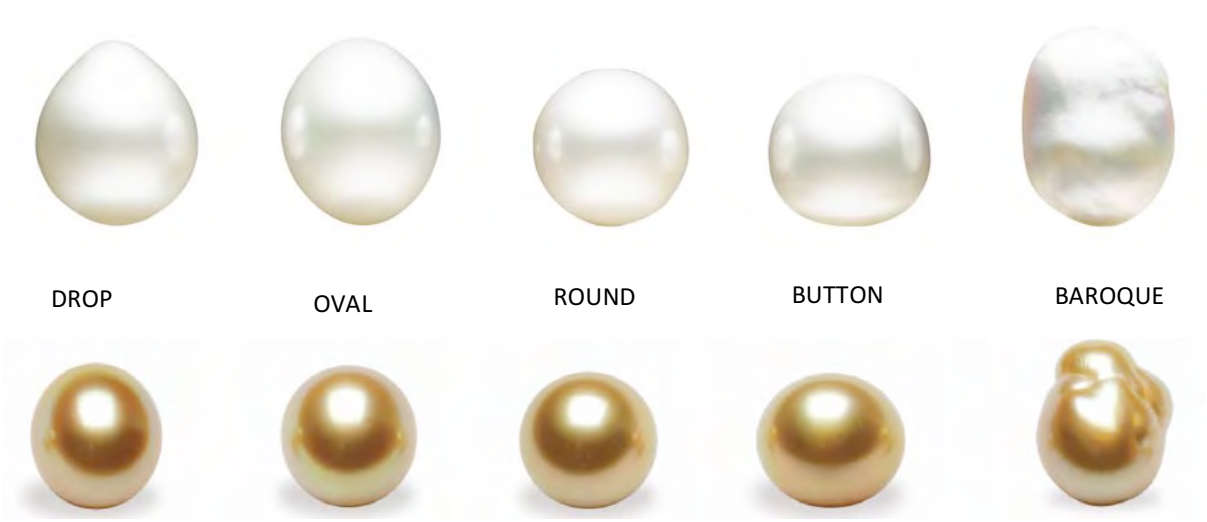
SHAPE

The same shape classifications apply to both treated and untreated cultured pearls.

Symmetrical shapes	**Asymmetrical shapes**	**Circlé shapes**
Round	Partially Round	Circlé Round
Drop	Partial Drop	Circlé Drop
Oval	Partial Oval	Circlé Oval
Button	Partial Button	Circlé Button
Baroque	Partially Baroque	Circlé Baroque
	Baroque	



DROP OVAL ROUND BUTTON BAROQUE

CIRCLÉ

Circlé cultured pearls have one or more grooved rings that can give the pearl an appealing individuality, although non-circlé cultured pearls are generally more valuable.

SIZE

Note on units of measurement

The size of cultured pearls is measured in millimetres across the widest horizontal axis or, for a more precise measurement, across the widest horizontal axis, the narrowest horizontal axis and the longest vertical axis.

The weight of cultured pearls is measured in momme or carats.

1 momme = 3.75 grams

1 carat = 0.20 grams

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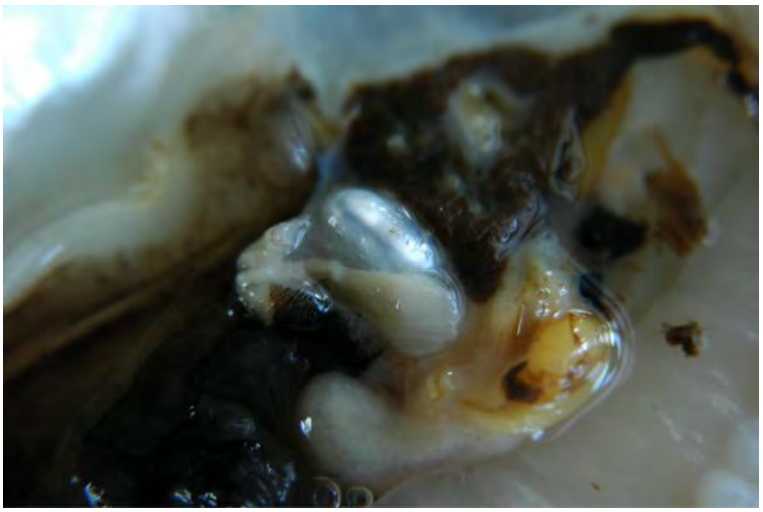
KESHI (ケシ) CULTURED PEARLS

Original keshi cultured pearl sizes were “seed pearl sizes” and could be found close to the gonad; they occurred as a consequence of the culturing operation in the Akoya pearl oyster (right – multitude of seed sized keshi cultured pearls in an Akoya pearl oyster partially in the gonad)

Accidentally or unintentionally produced saltwater cultured pearls without a solid bead at their centre are called non-bead cultured pearls. Some are commonly known as “keshi cultured pearls” from the Japanese word for “poppy seed” that indicated their sizes as originally conceived. However larger non-bead cultured pearls are today also referred to as “keshi”.

Today keshi cultured pearls generally range in size from sometimes <1 mm – 16 mm but are occasionally found in larger sizes which are considered to be very rare.

Lately keshi cultured pearl sizes are larger as they occur in *Pinctada maxima* pearl oysters but are still found close to the gonad; they occurred as a consequence of the culturing operation (right – large keshi cultured pearl in *P. maxima* partially in the gonad)



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Acknowledgements

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'Pearl Fishery, Torres Strait':
an 1886 engraving