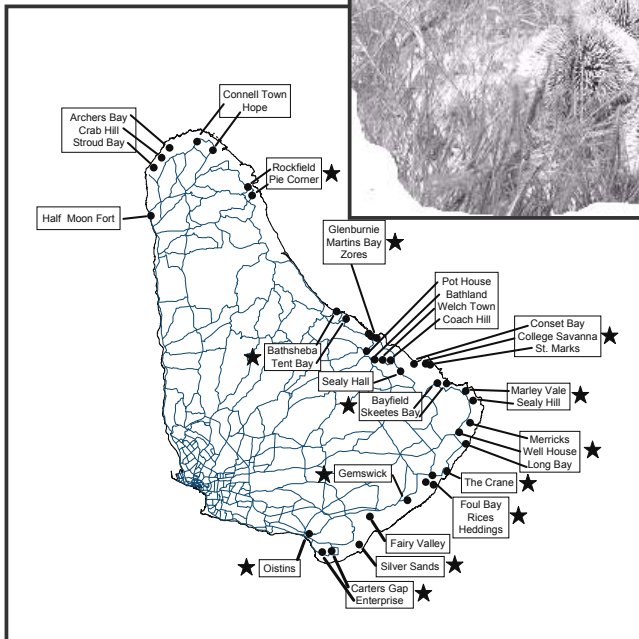
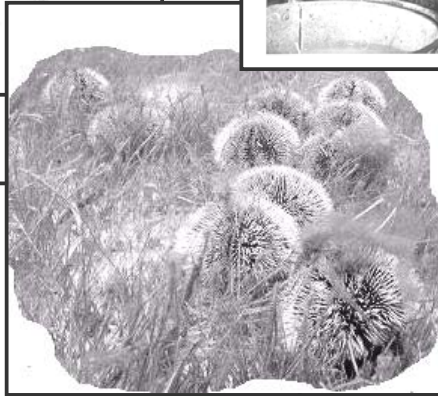
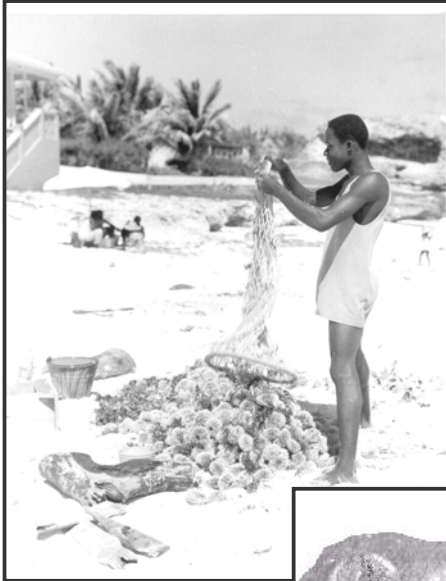


# BARBADOS SEA EGGS PAST, PRESENT, FUTURE



**Fisheries Division**  
**Ministry of Agriculture and Rural Development**  
**June 1999**

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Cover photographs, clockwise from top left:

- A diver empties a net collecting bag on the beach (Fisheries Division file photo)
- A typical beach scene during harvesting when sea eggs were plentiful (Fisheries Division file photo)
- Sea egg roes - by the bucketful (Fisheries Division file photo)
- A small meeting on the future of the fishery, on the beach at Sam Lords Castle (photo by Sharon Almerigi)
- The main sea egg fishing communities of Barbados
- In the center, sea eggs on the grounds (photo by Hazel Oxenford)

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It is a product of the Barbados Coastal Conservation Programme (Phase 1) Demonstration Project "Community-Based Sea Urchin Management" implemented for the Coastal Zone Management Unit by People Dynamics Associates, Barbados, in collaboration with the Fisheries Division.

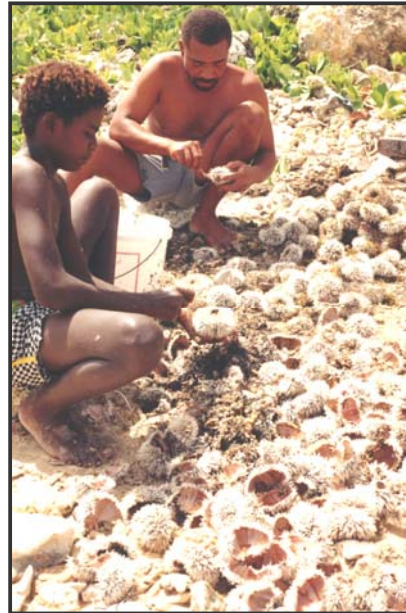
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## INTRODUCTION

In Barbados there is a small, but important, fishery for the roe of the white sea urchin (*Tripneustes ventricosus*), known as sea eggs. The fishery for this traditional delicacy has been carried out for over a hundred years. In past years, scenes such as those shown on the cover and below were common on the beaches of Barbados. The resource has a history of fluctuations leading to the first conservation legislation in 1879, forbidding the taking of sea eggs from April to August. In the 1970s and 1980s the abundance of these sea urchins in the fishing areas on the south, southeast and east coasts declined dramatically, to the extent that by the late 1980s the fishery had collapsed and headlines such as the one below had become the norm.



Breaking sea eggs on the beach in times of plenty (photo by Charles Grant, Nation Publishing Co. Ltd.

Will there ever be sea eggs in Barbados again, and if there are, how can we keep them from disappearing once more? The answer is yes, through good management of course. But, what is that? In our view, a combination of science, knowledge and commitment from the people who make their living from the resource and cooperation from the public who cannot wait to have some to eat.



In this booklet, we provide some of the information available about sea eggs and the fishery, attempt to show how this information can be used. Hopefully, in some small way this will contribute to the recovery of the sea egg fishery.

## BIOLOGY

Sea eggs are a species of sea urchin. They are echinoderms (which means spiny skin). The echinoderm body consists of five, more-or-less, identical sections around a central axis. The roughly, spherical outer skeleton, or test, of a sea urchin is made up of fused calcareous (calcium carbonate) plates. There are two series of plates that alternate around the test: the ambulacral (derived from the word ambulatory) and the inter-ambulacral series.

The ambulacral plates have many tiny holes through which the tube feet protrude. These can be felt clinging to your hand when you pick up a live sea egg. The animal uses them to move along the sea floor, cling onto bits of sea weed or stones that

it covers itself with, and also to move food to its mouth. Tube feet are part of a water vascular system that is unique to sea urchins. A tube foot is extended and made rigid when fluid from the water vascular system is forced into it. The foot is then moved by the muscles in the wall of the tube.

The spines are slender calcareous outgrowths from the test. Sea urchins can move the spines, and in addition to their obvious use in defense against predators, they can also be used to move about. The spines occur over the entire surface of the test. Whereas the spines are white, the numerous black tube feet in the ambulacral plates gives the animal its characteristic black and white banded appearance.

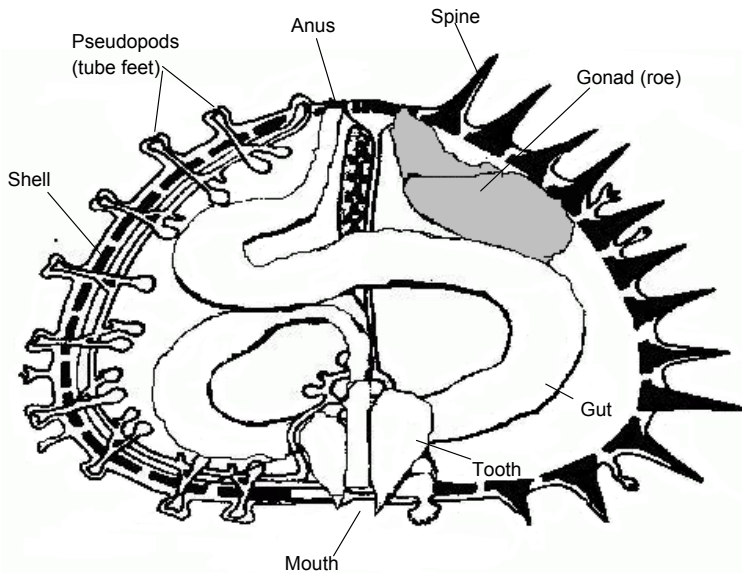


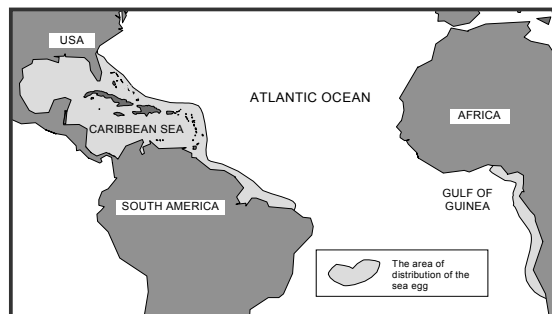
Diagram of a typical sea urchin cut in half (cross section) (from Infofish International, May/June 1988)

The inside of the sea egg is filled with a fluid in which the organs, such as the gut are suspended (see diagram). The mouth of the sea egg can be protruded. It is located at the center of the lower (or oral) side of the test, and included several calcareous teeth that can tear and drag food into the animal's mouth. The whole structure is known as the Aristotle's lantern as it is said to resemble an old-fashioned oil lamp. The anus is located in the center of the upper side of the animal.

The gonad or roe of the sea egg is divided into five lobes radiating from the center of the upper side of the test. The lobes are attached to the inter-ambulacral plate series. Each lobe has a small opening, known as a gonopore, located in special plates which encircle the anus (genital plates). Through these pores, the eggs and sperm are released during spawning.

### The distribution of sea eggs

The sea egg is a common coastal inhabitant of the central Atlantic Ocean. As the figure shows, its geographic distribution extends from the west African coast to the Gulf of Mexico, as far south as Brazil and north as mid Florida.



The world distribution of the sea egg (Map by Robin Mahon)



Sea eggs live in a variety of habitats, including sea grass beds, rocky rubble and rock flats. They prefer areas that support dense algal growth. Sea eggs are seldom found on living coral, sand, or at depths greater than thirty feet.



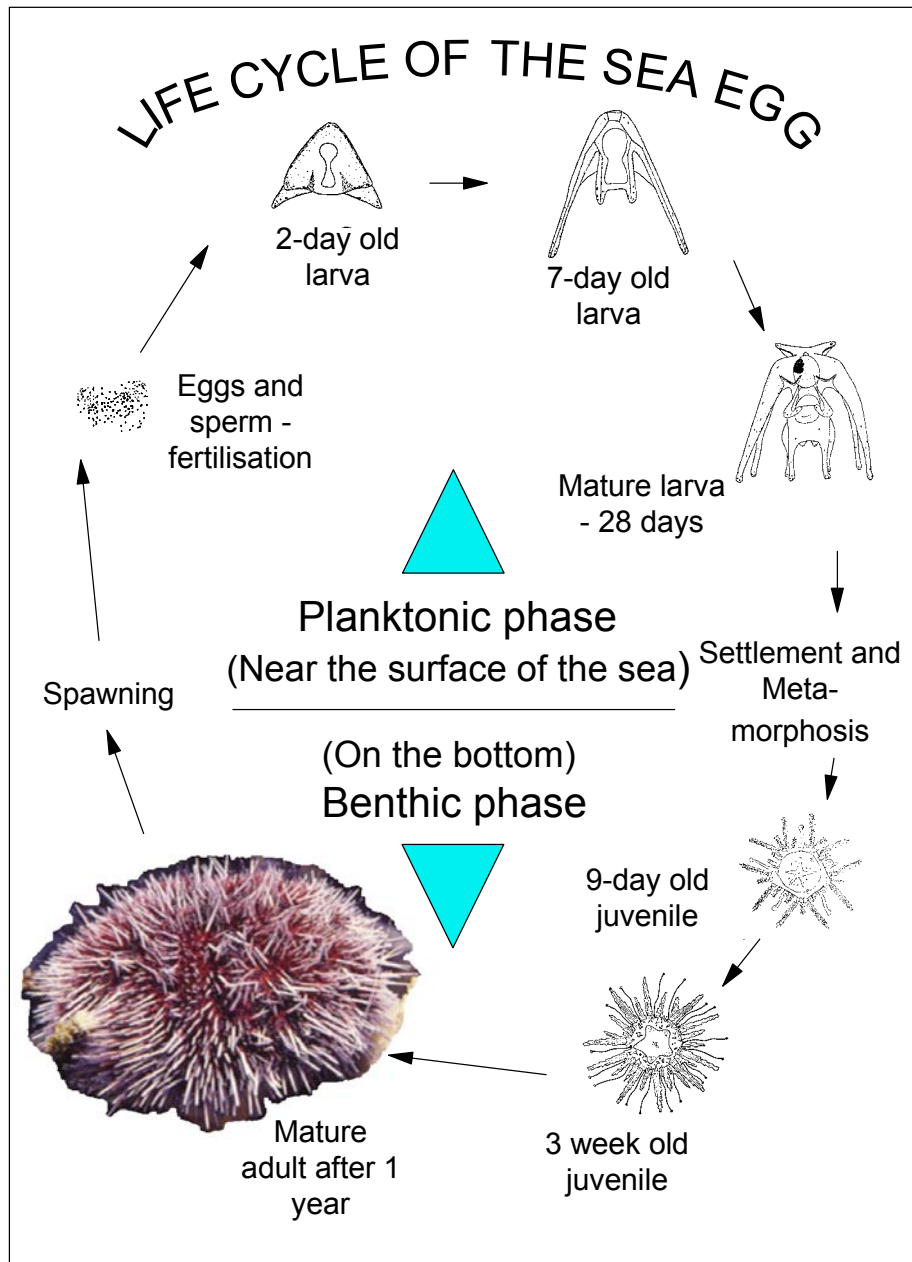
The main sea egg fishing grounds of Barbados (map by Robin Mahon)

Around Barbados, sea eggs tend to be most abundant along the north-east and south-east coast. Comparatively dense patches of sea eggs are also found around the northern tip of the island. They used to occur along the south coast, especially in the area of Pelican Island before the construction of the deep water harbour. With a few exceptions, such as Maycocks Bay and Brighton, sea eggs have always been rare along the west coast. This is probably due to the presence of the well developed coral reef system along this coast. They are not common on live coral reefs. The figure to the left illustrates the distribution of traditional sea egg grounds around Barbados.

## The life-cycle

Like all other sea urchins, sea eggs are dioecious, that is, every sea egg is either male or female. To breed, a group of sea eggs release their eggs and sperm into the water at the same time -- spawning. Fertilization and development of the eggs and larvae take place in the water column. This stage of the animal's life-cycle is referred to as the planktonic phase (plankton are the microscopic animals that live in the sea water column). Although the tiny larvae, known as a pluteus larvae, can swim a little, they are at the mercy of the currents. They develop through several stages until ready to settle back to the bottom, metamorphose and begin the benthic phase of the life history.

At that time, after about four weeks of planktonic existence, the larvae must reach a suitable substrate upon which to settle. If such a substrate is not found in time, the larvae will die. Once the larva settles on a suitable surface, it quickly metamorphoses into a small sea egg. Within a year, the small sea eggs grow into adults and attain sexual maturity. The life-cycle is summarised in the diagram on the next page.



The life-cycle of the sea egg showing the two phases, the planktonic when the eggs and larvae drift in the water column, and the benthic, when the young and adults live on the bottom. The larvae and juveniles are shown disproportionately large relative to the adult (Diagram by Chris Parker and Robin Mahon, larval and juvenile stages from Lewis 1958)

During the annual reproductive cycle the condition of the sea egg gonads, or roe, changes significantly. In small juveniles less than 35 mm, maximum test diameter, the gonads usually cannot be seen, or only appear as a fine thread. By the time that the sea egg reaches a size of about 35-40 mm in test diameter, the roe can be easily seen. Even at this small size, sea eggs can be induced to spawn.

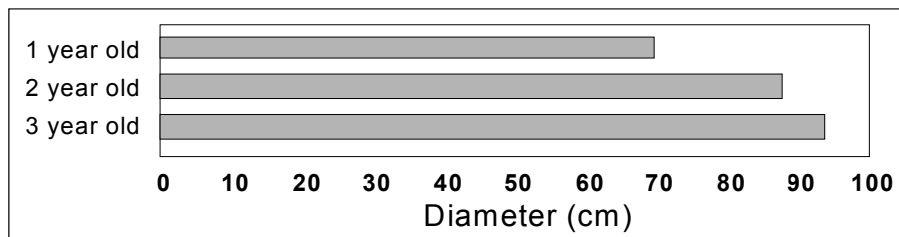
However, sea eggs do not spawn naturally until they reach at least 60 mm in test diameter. Sea eggs within the same area follow a similar annual cycle of sexual maturation. This ensures that they spawn at the same time, thus increasing the chances of fertilization. Sea eggs therefore tend to have a distinct spawning season - April to August - although there is some spawning year-round. As a result, the larvae also tend to settle at approximately the same time - September to October. Then the sea eggs have about nine months of growth before the next spawning season begins.

The fact that sea eggs spend a part of their life-history in the plankton is important, because it means that they may drift away from the areas where their parents lived. In theory, since the currents flow past Barbados from east to west, the larvae could drift away from the island. However, there are many small back-currents and counter-currents near to the shore that probably serve to keep most of the larvae near to Barbados. Even so, around Barbados, larvae may be moved from one area to another.

### Feeding, growth and mortality

Sea eggs eat sea grasses, such as turtle grass and several species of sea moss. They appear to prefer brown algae, especially *Padina* sp., *Sargassum* sp., *Dictyota* sp., but will also eat some green algae such as *Ulva* sp., *Zonaria* sp., and *Cladophora* sp. Grazing by sea eggs is helpful to sea grass beds as they tend to prefer the older tips of the sea grass plants. These parts of the plants are generally too old to benefit the plant and they tend to shade the younger shoots, hampering their development. Therefore, removal of these portions can greatly improve the growth of the plants and the sea grass bed as a whole.

Sea eggs live for about three years. Most of their growth takes place in the first year. The figure below gives their approximate diameter in each year of life.



Sea eggs have some natural enemies, particularly when small. Several species of fishes can feed on them, especially parrotfishes (chubs), triggerfishes (old wives) and puffers. Sea eggs also sometimes settle on unsuitable areas such as tide flats and die due to exposure to the air and heat. Fishers also believe that pollution is responsible for death of many sea eggs. However, in Barbados, fishing is still the main cause of death.

Many fishers believe that the disease that killed the black sea eggs (cobblers) in the early 1980s also killed the sea egg, but there is no evidence that this disease affects white sea eggs.

## THE FISHERY

Sea eggs are harvested for their roe, a nutritious and tasty delicacy. Barbados, St. Lucia, Grenada and Martinique are the only Caribbean islands where sea eggs are harvested intensively. Archeological evidence indicates that sea eggs were harvested in Barbados from pre-historic times by the island's Amerindian inhabitants, followed by the first 17<sup>th</sup> century British settlers of the island.

In Barbados, some of the methods of harvesting and marketing sea eggs have been traditionally maintained for decades. This is clear from descriptive accounts of the fishery given by various authors from the 1930's to the late 1980's.

### Harvesting

Small boats (known locally as "moses") were used to transport divers to the more distant sea egg beds. Other divers, working the sea egg beds closer to shore, would transport their catches in floating wooden crates or in net bags hung from a maypole for floatation. The sea eggs were "picked" from the sea floor by hand, or forced out of crevices with pieces of iron referred to as "rakes". The eggs were collected in bags (either made of netting, crocus bags or discarded sugar bags) for transport to the shore.

As with most local fisheries, the traditional harvesting methods for sea eggs have changed over time. The motorization of vessels has reduced the time that it takes to get to the fishing grounds, thus giving the divers more time on the grounds for harvesting. Diving was made more comfortable with the introduction of masks and snorkels in the 1960's and later, more efficient with the introduction of SCUBA. Indeed, increased harvesting efficiency has accompanied each technological improvement. This has not only assisted the regular harvesters but also encouraged more divers to harvest sea eggs on a "casual" basis.

Fishers recognise that there are four types of sea egg fishers:

- Divers who fish for flyingfish and big fish for most of the year and who dive sea eggs in the off-season as an alternative source of income.
- Full-time divers, who harvest a variety of resources by diving, including lobsters, sea cats, and sea moss, and who turn to sea eggs in season.
- Holiday divers, who take their vacation to coincide with the sea egg season as a means of supplementing their salary from their main job.



A sea egg diver empties a good catch from a net collecting bag



- Weekend and casual divers, who dive mainly for recreation and personal consumption on weekends but may also offer sea eggs for sale.

The first two types are considered to be the 'serious' divers.

## Marketing

Onshore, the shells were broken open and spoons were used to deftly scoop out the roe. The roe was then packed into cleaned intact "half shells", also known as husks. It is estimated that, on average, the roe of 15 sea eggs were required to fill one husk. Leaves of the sea grape (*Coccoloba uvifera*) were shaped into cones, then filled with roe and used to cover the husks (see picture to left).

Marketing the roe in the "half shell" is believed to date back to 1803. In the early 1940's, the roe was also sold in empty milk cans. From the mid-1980's sea egg roe was packaged for sale in plastic ice cream cartons. This latter packaging method rapidly increased in popularity and by the early 1990's had nearly completely replaced the older methods.

The annual sea egg fishing season was timely for other fishers, as it came when the season for flyingfish and the other large pelagic fish, such as dolphin, was over. In addition, the beginning of the season also coincided with the last weeks of the school summer holidays. Hundreds of Barbadians, including women and children became involved in some aspect of the sea egg fishery. In 1948 the industry was described as employing "almost every available fisherman and their families". The traditional roles for the women and children were the processing and sale of the sea eggs on shore. Persons were described by the tasks to which they were assigned i.e. "divers", "breakers" and "vendors".



A sea egg breaker with a shell full of roes and a grape leaf cone (photo by Grantley Sealy, Advocate Co. Ltd.)

In the earlier days of the industry, sea eggs were sold not only on the beach but also by vendors transporting their stock for sale, usually on trays, throughout the major towns and housing areas. Some composed special jingles to advertise their wares. One such jingle, is attributed to a male hawker named Roach of Long Bay, St. Philip, who sold his sea eggs along Hastings Road, and in Bridgetown, Fontabelle and Black Rock. It was as follows:

*Sea eggs morning! Sea eggs!  
Titty Ann, T'Ann, T'Ann  
Titty Ann, T'Ann, T'Ann  
Sea eggs morning! Sea eggs!  
Like a sugar , like a honey  
Ten pound to the cup.  
Sea eggs morning! Sea eggs!*

Although some persons still find employment as breakers and vendors of sea eggs, the number and need for specialist vendors has greatly reduced and most sea eggs are now sold by the divers directly at the beach.

### **History of the fishery**

The history of the Barbados sea egg fishery has been one of ups and downs, but unfortunately in recent years, it has been mainly down. There were several periods during the last 120 years, when it was feared that the sea egg fishery would collapse. Such fears must have first led the Government of Barbados to become involved in the management of the fishery.

**1879:**-- The first laws governing the sea egg fishery were in the Sea Egg Preservation Act of 1879. The Act established an annual fishing closed season (1 April to 31 July, inclusive). Anyone caught harvesting, selling, or in possession of sea eggs during this period could be fined or imprisoned and could have their catch confiscated. The Act also gave the Governor the power to alter the close season of any year by simply publishing a notice in the *Official Gazette*.

**1899:**-- There were renewed fears of a possible collapse of the fishery which caused Mr. J.N. Lofty to present a bill in Parliament calling for a two-year sea egg harvesting ban (1900-1902). A parliamentary committee appointed to consider the bill, interviewed sea egg fishers and concluded that the stocks had declined considerably due to "persistent breaches" of the law. It was suggested that the annual close season should be extended to the end of September and that enforcement should be improved. Accordingly, the sea egg fishing closed season was extended to September 30 for each of the next five years.

**1900:**-- Amendments to the Act were aimed at improving enforcement. Police and magistrates were instructed to appoint rural constables, who were to be supplied with copies of the Act and to "impress upon them that they are required to use every effort in their power to secure the observance of the provisions of the Act".

**1904:**-- All of the fisheries laws of the day, including those related to the sea egg fishery, were compiled in the Fisheries Regulation Act, 1904-5. Some new clauses were also added. Owners of boats or gear used in illegal harvesting of sea eggs could also be punished under the law. In addition it was made illegal to "...willfully and wantonly destroy sea eggs lying on any bank or shallows along the coast..." or to "...cleanse any sea eggs and leave the shell or offal thereof on any bank or shallow on which sea eggs lie...". The fines were also changed so that the charges of possession or sale of sea eggs

during the close season carried a lesser penalty than the other offences. Notably the threat of imprisonment was removed.

**1912-1923:**-- During this period of wartime and economic hardship in the island, government shortened the closed seasons, probably to allow persons to access this sea food resource for as long as possible.

**1918:**-- A group of visiting marine scientists from the University of Iowa were asked to "investigate the sea egg at Barbados with a view to suggesting the best means of protecting it from extermination, which seemed to be greatly feared."

**1937-1941:**-- As before, during this period of war and economic hardship government shortened the close season.

**1945:**-- Government went even further to ensure that Barbadians would be able to access this food supply, by controlling the maximum prices at which sea eggs could be sold. This continued up until 1950.

**1948:**-- The first Fisheries Officer, Mr. Dudley Wiles writes, "It seems the general view that the latitude given in the early years of the war (referring to the shortened seasons from 1937 to 1942) ruined the sea egg industry and it was not until 1946 that the catch began to show some recovery".

**1946:**-- From about this year, Barbadians appeared to enjoy consistently good sea egg harvests for at least the next thirty years.

**1970's:**-- Towards the end of this decade, divers began to express serious concerns over an apparent substantial reduction in the abundance of sea eggs on traditional harvesting grounds.

**1980's:**-- By the middle of this decade it was widely accepted that the local sea egg stock had collapsed. The sea eggs were first observed to disappear from the west coast, followed by the south coast, the south-east coast and finally, the east coast.

**1987:**-- In an effort to let the stocks recover, the government imposed a two-year fishing moratorium from September 1, 1987 to August 31, 1989. The first year of the ban was generally well respected by the fishers and the stock showed promising signs of recovery. From March 1989 until the official start of the season, several instances of illegal poaching were observed.

**1989:**-- The fishery was reopened, and the Fisheries Regulation Act of 1904, was amended to increase the penalties for illegal fishing, the annual fishing closed season was extended to run from January 1<sup>st</sup> until August 31<sup>st</sup>. This was the first time since the turn of the century that the length of the fishing season was actually reduced.

**1990s:**-- Although it was considered that the stock had recovered somewhat by the end of the ban, the recovery was short-lived and fishing quickly depleted the stocks once more. Throughout this decade, sea egg stocks were almost non-existent.

**1993:**-- The Fisheries Regulation Act of 1904 was repealed and replaced with the Fisheries Act, 1993<sup>1</sup>. The format of the Fisheries Act was significantly different from

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<sup>1</sup> Enforcement of the Act was vested with "authorized officers" and the law courts. Authorized officers included officers of the Fisheries Division, Customs, Police and the Coast Guard. The enforcement laws gave the authorized officers the power to stop and search fishing vessels and vehicles suspected of

that of the Fisheries Regulation Act. Laws related to the management of fisheries were more general to cover all controlled fisheries and were not written for individual fisheries. The laws pertaining to the enforcement of the Fisheries Act were made more extensive. Under the Fisheries Act of 1993 any legal closed season for sea egg harvesting would have to be specifically prescribed by the Minister responsible for fisheries. This was not done until 1998. Thus, from a legal standpoint, the fishery was unregulated during the intervening five years. This proved to be of little harm as the small size of the stock during this period precluded any substantial fishing.

**1997:--** The Fisheries Division published a comprehensive management plan for all of the existing Barbadian fisheries including that for sea eggs. The plan identified co-management as an essential element for successful management of sea eggs. The rationale was that including persons involved in the fishery in the management planning process enhanced the chances that the regulations would be amenable to them and consequently, that fishers would abide by them.

**1998, May:--** A joint project between the Fisheries Division and the Coastal Zone Management Unit seeks to establish a co-management mechanism.

**1998, August:--** A two-year ban on sea egg fishing is imposed. This ban aims to provide the sea egg stock time to recover, and to allow government the opportunity to set up a co-management arrangement with the sea egg fishers. Other recommendations made to manage the sea egg fishery were also put into law in August 1998: A maximum fine of \$50,000 and/or two years imprisonment for contravening any of the regulations. The regulations pertaining to the sea egg fishery included banning the use of SCUBA equipment in harvesting.

**1999:--** The Barbados Fisherfolk Divers Association is formed in February with the aim that it would represent the fishers in the co-management process.

## **What went wrong with the fishery**

The periodic declines in the abundance of sea eggs observed over the last 120 years were usually blamed on illegal poaching and extensions of the fishing seasons. The legislative attempts to deter poaching, during the latter half of the century mainly focussed on increasing the fines for the offences. The penalties were increased in 1963, 1977 and in 1989. However, opinions are divided as to the main cause of the most recent and significant sea egg stock collapse. It appears that several factors, including

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being used in contravening any of the laws in the Act. Any fishing gear, vessel and cargo, or vehicle suspected as being used in the commission of an offence under the Act could be seized. Finally, authorized officers had the power to arrest any person suspected of committing an offence under the Act.

The Fisheries Act also vested the Minister for fisheries with the responsibility of making regulations for the management of any fishery. These regulations could include, limiting fishing effort, setting maximum allowable catches, prohibiting any fishing method, controlling the use of SCUBA in fishing, prescribing closed seasons and closed areas and regulating the marketing and distribution of captured aquatic fauna. The Minister was also responsible for prescribing measures for the protection of certain specific marine resources including sea eggs.

heavy fishing pressure and a reduction in the quality and quantity of suitable habitats, have together caused this collapse.

Most fishers emphasize the role of pollution in the demise of the sea eggs. However, many also recognise the changes in the ways of fishing as having a large role to play. Indeed, it appears that there were some traditional conservation measures practiced by fishers in the past, but no longer commonly used.

According to fishers when sea eggs were abundant, skilled divers used the following management techniques:

|                                                  |                                                                                                                       |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <i>Testing for ripeness of roes</i>              | Checking a few sea eggs from a patch to see if they are ripe. If not, no more sea eggs would be taken from the patch. |
| <i>"Cutting the edge"</i>                        | Fishers would take the ripest sea eggs from the edge of the patch and leave those in the center to ripen.             |
| <i>"Chubbing"</i>                                | Fishers would leave large individuals scattered throughout the fishing area as breeders.                              |
| <i>Moving sea eggs from one place to another</i> | Fishers might drop small unripe urchins in places that have been fished out.                                          |
| <i>Burying husks on the beach</i>                | Fishers would break sea eggs on the beach and bury the husks so that they were not dumped in the sea.                 |

Many fishers believe that the disease that killed the black sea eggs (cobblers) in the early 1980s also killed the sea egg, but there is no evidence that this disease affects white sea eggs.

Among all reasons relating to fishing, the simple failure to enforce the regulations is the most frequently given.

There is very little information regarding the effects of pollution on the sea eggs, or any other sea life around Barbados. Fishers believe that the increase in use of fertilizers and pesticides have played a role not only in killing sea eggs, but also in killing the sea moss that they feed on. These and other pollutants, including sediments, in the runoff that results from heavy rains are believed to kill sea eggs.

## **WHAT LIES AHEAD FOR THE SEA EGG FISHERY?**

'Co-management' is the collaboration of all the stakeholders in managing the fishery. For the sea egg fishery the primary stakeholders are the people who earn income from the fishery, the fisherfolk, and the Fisheries Division. Other stakeholders are the public consumers and other government departments with an interest in the marine environment and resources. In order for the fisherfolk to play their role in co-management, they need to become organised.



A sea egg fishery co-management project was implemented by the Fisheries Division and the Coastal Zone Management Unit in 1998-1999. This project involved making contact with the fisherfolk, getting their views on the problems and the solutions, seeing if they were interested in a co-management arrangement, and making a plan for how to develop this arrangement. The participatory process that was followed is shown in the diagram below.

As the newspaper headlines on the right suggest, the co-management project has made a start with establishing a co-management system for the sea egg fishery in Barbados.

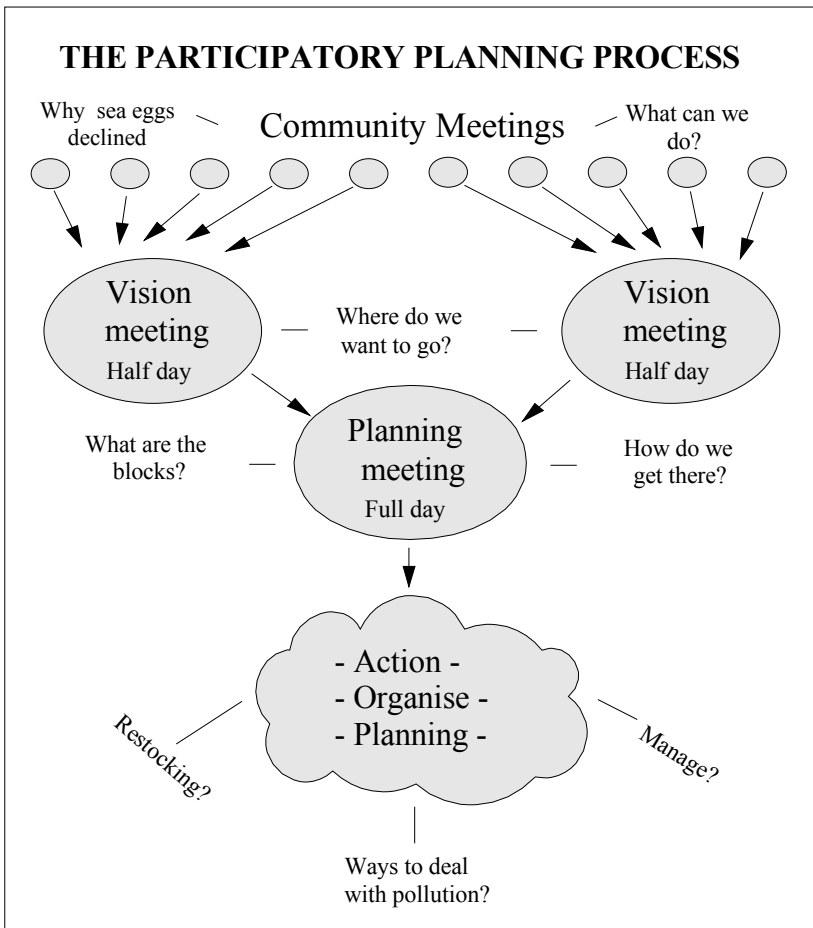


Sea eggs always make news

### The fishers' vision

After community discussions with more than 100 sea egg fishers around Barbados, 37 fisherfolk representatives from 17 communities came together in meetings at Oistins, Bathsheba and Blades Hill to

determine the future of the sea egg fishery.



In these meetings, the fishers developed a vision by asking, "what do we want to see in place in five years for the sea egg fishery?" All agreed on the following:

- Sea eggs back and divers working
- Management measures for the sea egg fishery decided upon and in place, including licensing
- Sea egg divers' organisation established

- Fisheries and sea egg divers working together, co-managing the fishery
- Laws against poachers more strictly enforced
- Safer harvesting
- Marketing system for sea eggs set up
- Having some effect on pollution & polluters
- Research & development activities ongoing.



Fishers working on a strategic plan for achieving their vision of the sea egg fishery (photo by Robin Mahon)

### **The co-management strategy**

The fishers and the Fisheries Division then came together to discuss how to achieve the vision. Together, they identified the strategic directions shown below.

***Strategic Direction # 1:***

**Cooperating for the betterment of the industry**

- Divers form an organisation.
- Get meeting attendance from others.
- Bring experienced fishers into Fisheries.
- Formulate a co-management plan.

***Strategic Direction # 2:***

- Teaching people the value of the sea egg fishery
- Teach people about conservation.
- Promote the value of sea eggs to Barbados by lobbying.

***Strategic Direction # 3:***

**Improving laws and enforcement**

- Develop methods for making enforcement work.
- Protest against pollution.

***Strategic Direction # 4:***

**Trying new methods**

- Restocking the sea eggs, either from abroad or from another site on the island

During these meetings, fishers offered many ideas on how to make the sea egg fishery sustainable. They developed an action plan that included the elements shown in the table below.

#### **ACTION PLAN ELEMENTS**

- Establish an organisation for sea egg fishers
- An outreach program to interest other divers, give them information about what we have done and get them involved.
- Distribute a brochure with information about sea eggs and the sea egg fishery.
- Begin to lobby the Department of Agriculture and the Department of Environment with petitions for action.
- Set up a law enforcement committee that includes the Fisheries Division, the Association, the Police and the Coast Guard.
- Get information about pollution from the government.
- Consider restocking of sea eggs.
- Develop a co-management plan for sea eggs.

### **The role of the public and the judiciary**

Although fishers are willing to play a role in enforcement, the chances of reestablishing a sustainable fishery will not be great without the cooperation of the law enforcement agencies and the judiciary. There is the need for these agencies to take enforcement of the fishery regulations seriously.

The public too has a major role to play. We must refuse to buy local sea eggs during the closed season. Furthermore, we must not condone the purchase of illegally fished sea eggs by others. When it is socially unacceptable to eat illegally harvested sea eggs, illegal fishing will be reduced to a minimum. Then we may all be once again able to enjoy sea eggs from time-to-time.



**What we hope to see once again in the future:  
Sea eggs-a-plenty for sale in the shell (Photo  
by Euchard Fitzpatrick, Barbados National  
Trust Collection**

## FURTHER READING

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# WHAT YOU CAN DO TO HELP!

## FISHERFOLK

BE AWARE OF AND FOLLOW REGULATIONS

JOIN THE BARBADOS FISHERFOLK DIVERS ASSOCIATION  
AND GET INVOLVED IN CO-MANAGEMENT; YOUR  
KNOWLEDGE AND EXPERIENCE IS NEEDED

## CONSUMERS

DO NOT BUY LOCAL SEA EGGS IN THE CLOSED SEASON,  
AND DISCOURAGE YOUR FRIENDS FROM DOING SO

## EVERYONE

REPORT TO THE POLICE AND FISHERIES DIVISION  
ANYONE SEEN HARVESTING OR SELLING SEA EGGS  
ILLEGALLY. YOU DON'T HAVE TO GIVE YOUR NAME



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