

General advice

■ Draw up a business plan and consult independent financial advisors.

■ Identify your market(s) at the outset.

■ How likely are you to receive planning permission from the competent authority (eg Local Council, Crown Estate)? Consult local aquaculture development plans, where they exist, and speak to the staff involved in granting licences.

■ Is the local infrastructure (roads, piers etc.) adequate to support your proposal, or will you have to construct them?

■ Can a Crown Estate lease be secured? Consult them.

■ Does the site have a conservation designation or conservation value/interest? What about the surrounding area? Could it affect access to the area? Consult the appropriate conservation organisations, statutory (ie English Nature, Countryside Council for Wales, Scottish Natural Heritage, Environment and Heritage Service (Northern Ireland)) and voluntary, for the area.

■ Is there likely to be any hazard to navigation or transport? Consult the Maritime & Coastguard Agency and the Department of Transport.

■ Are local inhabitants or other user groups of the marine environment likely to object? Can objections be overcome through dialogue, management agreements or design modifications? Consult them early on.

■ Does the proposition require grant aid or other assistance and how likely is it to be awarded? Consult the agencies administering grant and other business assistance in the area from the start.

■ Generally, avoid areas close to boatyards, marinas, industrial developments or large urban areas.

This minimises the risks from pollutants or other anthropogenic inputs. Potential inputs from the water catchment area (eg from farming, forestry, horticulture, chemical industry etc.) should be investigated.

■ Evaluate the potential risk (disease, nutrient input, therapeutant use, predator displacement, controls on stock movement/sales following disease events on other sites etc.) from any other marine-based aquaculture activity in the vicinity.

■ How secure is the site? What is the risk from interference or other unwanted human activity? Can the site be secured if required?

■ Try and establish whether the area has a shellfish cultivation or harvesting waters classification from the local Environmental Health office or equivalent.

■ Try and establish whether the site has a history of algal biotoxin (PSP, DSP, ASP etc.) incidents or harmful algal blooms ('red tides'), although past track record is not always a predictor of future performance.

■ What potential predators, competitors or fouling organisms are likely to be encountered?

■ There are strict regulations controlling the movement of molluscan shellfish around the UK. This is to prevent the spread of oyster diseases that may affect native oyster stocks. In general, hatchery seed is certified disease-free, but part-grown stock may require checking by the competent authority before shipment. Check with The Centre for Environment, Fisheries and Aquaculture Science (CEFAS), Scottish Executive Environment and Rural Affairs Department (SEERAD) or Department of Agriculture and Rural Development (Northern Ireland) [DARD (NI)] for the latest position.

■ Once the business is operational, the site must be registered. Consult CEFAS, SEERAD or DARD (NI) as appropriate.

Further advice

■ For further advice on any aspect of scallop cultivation please contact the aquaculture advisor for your area.

They are:

England and Wales

Martin Syvret
Tel: 07876 035746
E-mail: m_syvret@seafish.co.uk

Scotland and Northern Ireland
Craig Burton

Tel: 07876 035771
E-mail: c_burton@seafish.co.uk

Alternatively, please visit our website at www.seafish.org/sea for more information. The website also contains details of the CD-ROM based resources produced by Seafish. There is a specific Hyperbook, which combines in-depth information regarding the culture of this species together with an economic modelling tool for business planning purposes. In addition, there is a more general Guide to commercial bivalve molluscs with information on aspects of cultivation, harvesting, the fishery, depuration and distribution for all species.



Sea Fish Industry Authority
Seafish House
St Andrew's Dock
Hull
HU3 4QE
Tel: 01482 327837
Fax: 01482 223310
Web: www.seafish.org.uk



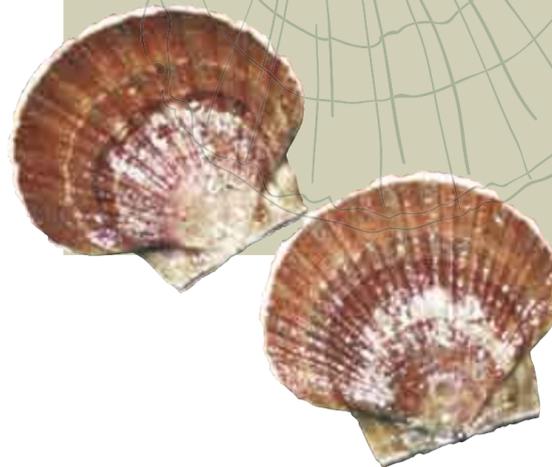
INVESTOR IN PEOPLE

SCALLOP CULTIVATION

This leaflet is intended to offer a summary of the methods used to cultivate King and Queen scallops in the UK. More detailed information about specific aspects of the business may be found in Seafish publications, technical publications from other agencies and books. Prospective cultivators are advised to consult these in addition to this sheet. Preliminary business planning assistance can be found in the associated Seafish economic model and 'Hyperbook' publications.



King scallops



Site selection

■ Before beginning any commercial activity, it is prudent to conduct small-scale trials for at least 12 months on the intended site. This will give an indication of its overall suitability. An initial site assessment using divers is also recommended.

■ Growth in King scallops is minimal below 10°C. Growth rate increases at temperatures above 10°C and the best sites for scallop cultivation are those where temperature is between 10°C and 17°C for the maximum length of time. Summer temperatures > 18 - 20°C and winter temperatures < 4°C can be stressful to scallops.

■ Salinity should be above 30 ‰.

■ Sites should be located in sheltered bays and lochs. Preferably the seabed should be clean and firm.

■ Tidal flow of 0.4 - 1.8 knots (0.2 - 0.9 m sec⁻¹) is suitable for suspended culture systems; 1 knot is optimal for seabed culture, although up to 2 knots can be tolerated.

■ To help cash flow in the first few years, it may be prudent to consider initially cultivating Queen scallops together with King scallops, as Queen scallops can take 2 - 3 years to reach market size (4 - 6 years for King scallops).

Cultivation techniques

a) Obtaining seed:



Preparing scallop spat collector bags

■ Longlines and collectors (eg an onion bag containing a filler material) are put out in the sea in May through to July at a time to coincide with the peak period of spat settlement. Plankton hauls can be used to determine the best time to deploy the main collectors. Scallop larvae will only settle on clean collectors and once in the sea collectors will only remain effective for about 10 days.

■ Collection of spat can be very variable between sites and between years but 50 - 100 King scallop spat per collector is possible for an average site. Queen scallop spat are generally more plentiful.

■ Seed (10 - 25 mm) can be purchased from commercial collectors. The larger the seed the more expensive it is, but survival rates will be better.

■ As scallops are sublittoral animals, when transporting seed they must be held in damp, humid conditions and remain out of the water no longer than 12 hours. Ideally they should be transported in water (eg in well-boats or in vivier lorries) but this can be costly.

b) On-growing techniques:

■ Scallop spat (at 10 - 15mm) can be taken off the collectors in October or November (ie 3 to 4 months after the peak spawning period) and transferred into pearl nets with 10 nets per dropper.

■ Based on no more than 33% flat surface coverage, stocking densities normally average about 80 - 100 small (10 - 20 mm) seed and 20 - 30 larger (20 - 30 mm) juveniles per pearl net.

■ Another option is to transfer spat from the collectors to North-west Plastic (NWP) trays placed in stacks on the seabed or suspended from longlines (at least 3m below the surface of the water).

■ At approximately 1-year old (~25 mm), scallops can be transferred into lantern nets at 50 - 60 seed per layer for the next stage of on-growing. They will need to be thinned to 30 per layer as they grow.

■ Once they reach 50 mm Queen scallops can be harvested or held ready for market in lantern nets. King scallops can continue in lantern nets until they reach market size (initial stocking densities for 60 - 80 mm scallops is 10 - 15 per layer) or they can be transferred to the seabed as they are now less prone to losses from predation.

■ Before and after seeding on the seabed larger starfish and other predators should be removed from the plot.

■ Fouling usually occurs on lantern nets and can lead to a reduction in the scallops' growth rates. Seabed cultivation is often considered the better option. As no net cleaning or grading is required, seabed cultivation is also a lot less labour intensive.

■ Seeding densities for seabed cultivation are normally 5 or 6 animals m⁻² but in extremely good sites have been as high as 24 m⁻².

■ Some growers have looked at 'cage' systems, which contain animals on the seabed using rigid mesh fences or cages placed around plots to help prevent scallops from swimming away.

■ An alternative on-growing method is called ear-hanging where a hole is drilled in the shell and the scallop is tied to the longline.

Seeding scallops on to the seabed



Harvest



Diver hand-harvesting scallops

■ King scallops are considered ready for market when >120 mm shell length (~250 g live weight, giving a meat yield of 55 - 60 g). In southern England this takes 3 - 4 years from spat collection and anywhere up to 5 - 6 years in Scotland.

■ Queen scallops can be harvested after 2 - 2.5 years (~40 g live weight, giving a meat yield of 10 g). Smaller animals can be sold as 'Princess' scallops.

■ Diver-caught scallops harvested from the seabed are a premium product and can generally be sold for a higher price than scallops dredged from a commercial fishery.



A delicious scallop dish

Markets

■ The best time for selling scallops is in December for the Christmas market. Demand is generally at its lowest between Christmas and Easter.

■ It is advisable to try and sell to local markets as scallops have a relatively short shelf life. However, there are good markets abroad for King scallops, particularly in France.

■ A variety of scallop species are cultivated in several countries around the world and you need to remain aware of any potential competition from cheaper imports.

Equipment

■ A boat will be needed for getting to your site and for working the gear or for using as a diving station. A suitable boat is likely to be between 6 - 10 m long, have a maximum displacement of 3 to 4 tonnes with a 40 horse power inboard diesel engine. A large, self-draining deck is essential.

■ A minimum of 3 longlines will be needed for producing 100 000 scallops (25 t). Longlines can vary between 100 m and 350 m although many growers use longlines that are 200 m long with headlines made of 16 -18 mm 'seasteel' rope.

■ Dropper ropes for collectors and nets are in 8 - 10 mm polypropylene rope and they should be at least 2 m short of the seabed to avoid siltation and predation. A weight (1 - 5 kg) should be attached at the end of each dropper to act as a ballast.

■ The moorings for each longline can be a single 2-tonne block or a steel anchor (40 kg) weighted with link chain at each end of the line.

■ Additional buoyancy will need to be added to the line as the weight of the stock increases. Surface buoys are used only as markers and if only 1/3 of the buoy is visible, additional sub-surface buoys will need to be added.

■ Pearl nets and lantern nets are available commercially although it may be possible to make a cheaper alternative yourself.

■ Additional equipment required may include storage and dispatch facilities, a depuration facility, weighing and grading machine, packing system, stock handling system.

■ A scallop farmer will also need an assortment of smaller pieces of equipment and safety clothing in addition to the more specialised items. Examples of the equipment required include First Aid kit, lifejackets/ buoyancy aids, especially when working from small boats, signal flares, additional boat safety equipment - consult the workboat code of practice for guidance, pressure washer, gloves, knives, communication equipment (mobile phone or VHF radio).