

# responsible sourcing guide: crabs & lobsters



*Cancer pagurus*  
© Scandanavian Fishing Year Book



*Homarus gammarus*  
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## Introduction

Numerous crab and lobster species are sold in the UK. The most widely available edible crab species is the brown crab, *Cancer pagurus*, which is one of the UK's most valuable seafood products. The velvet swimming (*Liocarcinus puber*) and spider (*Maia squinado*) crabs are also landed in the UK, but, as there is little demand for these species in UK retail markets, they are not discussed here. Two closely-related lobster species are available in the UK – the European lobster, *Homarus gammarus*, and the imported American lobster, *Homarus americanus*.

UK fleets took about half the 34,000 tonnes (t) live weight European catch of brown crab in 2005, with the rest shared mainly between France, Ireland and Norway (1). Most of the £30 million first sale annual landings of brown crab in the UK are exported live to France and Spain, but there is an increasing trend to add product value through processing for both home consumption and export.

The UK lands half of the European lobster catches of around 2500 t per annum (average for 2001-6) (1), with a first sale value in 2006 of £26 million (2). UK landings of lobsters are mostly exported live, although there is a local market for both whole live and processed product. Total annual landings for the North American lobster fishery over the last five years have been around 80,000 t, with a first sale value of almost £500 million.

The purpose of this guide is to outline the status of brown crab and European and North American lobster stocks and some of the measures being taken to manage their fisheries.

### BUYERS' TOP TIPS

#### 1) Know your source of supply

Although formal assessments are not carried out for crab and lobster stocks, all indicators show that most stocks are stable and efforts are being made to ensure sustainability. Many countries have concerns for increasing fishing levels, and there is widespread agreement that further precautionary measures are required to safeguard stocks.

#### 2) Comply with regulations

In many cases it is easy to establish whether a crab or lobster has been landed in compliance with regulations. All crab and lobster fisheries have minimum landing size (MLS) regulations, and in some areas, the landing of soft pre- and recently moulted, egg-bearing or 'berried' crabs and lobsters is prohibited. Also, some lobsters have a V-notch clipped into the tail to indicate that they are breeding stock and should not be landed. Your supplier should be able to demonstrate that all animals supplied comply with legislation. Above all, make sure that you do not dispose of any unused stock, or parts of crabs and lobsters, in

coastal waters. EU legislation prohibits the disposal of fish or shellfish offal from onshore processing, at sea.

#### 3) Understand your product

The UK domestic demand for brown crab products is met by local landings, cooked and processed in the UK. In contrast, most lobsters are sold live, and need to be stored in tanks with circulating aerated seawater. Lobsters that are sluggish may have been out of water for a long time or have suffered from poor tank conditions. Special care should be taken with lobsters supplied cooked or frozen, since this is likely to affect their shelf life and taste.

#### 4) Use the Seafish Responsible Sourcing Service

Seafish has created a service at [www.seafish.org/b2b/rss](http://www.seafish.org/b2b/rss) that gives information on sustainability issues. This links to other sources of information and the Responsible Fishing Scheme (BSi: PAS 72:2006), aimed at ensuring best quality and environmental practice onboard vessels.

# Biology and assessment of crab and lobster stocks

## Biology

Crab fisheries tend to be coastal. The majority of European lobsters are caught in shallow coastal waters, but American lobsters can also be found in deep water, particularly in or near canyons. Both animals usually live in crevices, under rocks or in burrows, from which they emerge at slack water to feed on a wide range of organisms living on the sea-bed, including other shellfish, which they crush with their powerful claws. As they have a hard exoskeleton, crabs and lobsters are only able to grow incrementally at the time of moulting, when the entire outer shell is cast. The soft internal tissues of the emerging animal rapidly increase in volume by the absorption of water before the new exoskeleton hardens. Moulting is frequent and growth is fast during their early life. Both the frequency of moulting and the proportional increase in size decrease with age and maturity. When moulting, crabs and lobsters are vulnerable to predation and are of poor marketable quality, but this is also the time when females mate. In due course, the eggs are extruded and attached to paddle-like appendages underneath the female's

tail. Such egg-bearing females are said to be 'berried'. This occurs typically in early winter in brown crabs, and in late summer or autumn in lobsters.

## Assessment

Assessments of brown crab and lobster stocks are based on analyses of size distribution data and trends in landings and fishing effort. This enables an index of stock abundance to be estimated, as well as the level of recruitment of young animals to the stock. A variety of mathematical models are used (3) to assess whether local populations are being exploited sustainably.

Currently, assessments of brown crabs and lobsters are carried out on a national basis. In the UK, stock units have been described for brown crab around the Shetland Isles, Orkney Islands, north west Scotland, west of Scotland, east coast of Scotland, western central North Sea (NE England), southern North Sea (East Anglia), eastern English Channel, western English Channel, Celtic Sea and Irish Sea. Each stock unit is based upon what is known of the species' local biology and fishery.

However, brown crabs may exhibit wide-ranging migrations, and ICES is moving towards international assessments and management advice for this species (4). Lobster stocks are mostly coastal, with restricted movements once they have settled on the seabed, and they can be assessed and managed on a national basis. There is currently no international assessment of either crabs or lobsters, and no internationally agreed stock management in European waters.

Canadian lobster stocks are assessed by the federal Department of Fish and Oceans and their fisheries are managed within 55 lobster fishery areas. Lobsters in USA waters are separated into Gulf of Maine, Georges Bank and Southern New England stocks and managed under seven Management Areas. Inshore stocks are assessed and managed by individual States, under the umbrella of the Atlantic States Marine Fisheries Commission. The offshore fisheries are managed by the federal National Marine Fisheries Service under the US Atlantic Coastal Fisheries Co-operative Management Act.

## Stock status July 2009

### Brown crab

Recent records show landings of brown crabs are generally being maintained or even increasing. However, there are signs that the quantity of crabs caught-per-unit of fishing effort is falling in some areas, but it is not yet clear whether this is indicative of a decline in stock abundance or a local fishery effect.

### European lobster

The majority of lobster stocks in UK coastal waters are in a satisfactory state, with catch rates that are stable or increasing, and with no sign of any imminent decline in recruitment of young lobsters into the stock.

### North American lobster

Lobster landings from most Canadian and US fisheries are currently very high in comparison with the long-term average. This reflects both increased abundance and also increases in fishing effort. Populations of lobster in US waters in the Gulf of Maine and Georges Bank are healthy and overfishing is not occurring. However, in Southern New England, lobsters are overfished and overfishing is occurring (5). In Canada the stocks are considered healthy and not overfished. Stocks are assessed

every five years. The 2006 assessment indicated exploitation rates of 60-90% in the Southern Gulf of St Lawrence and 70% or higher in inshore waters of SW Nova Scotia (6). Whilst there is little risk of an imminent prolonged decline in recruitment of young lobsters in most fisheries, there have been one or two areas where sharp declines have been observed due to major 'die-offs'. These observations suggest that fishery stress is compounded in some areas by environmental factors, which could include disease.

# Distribution

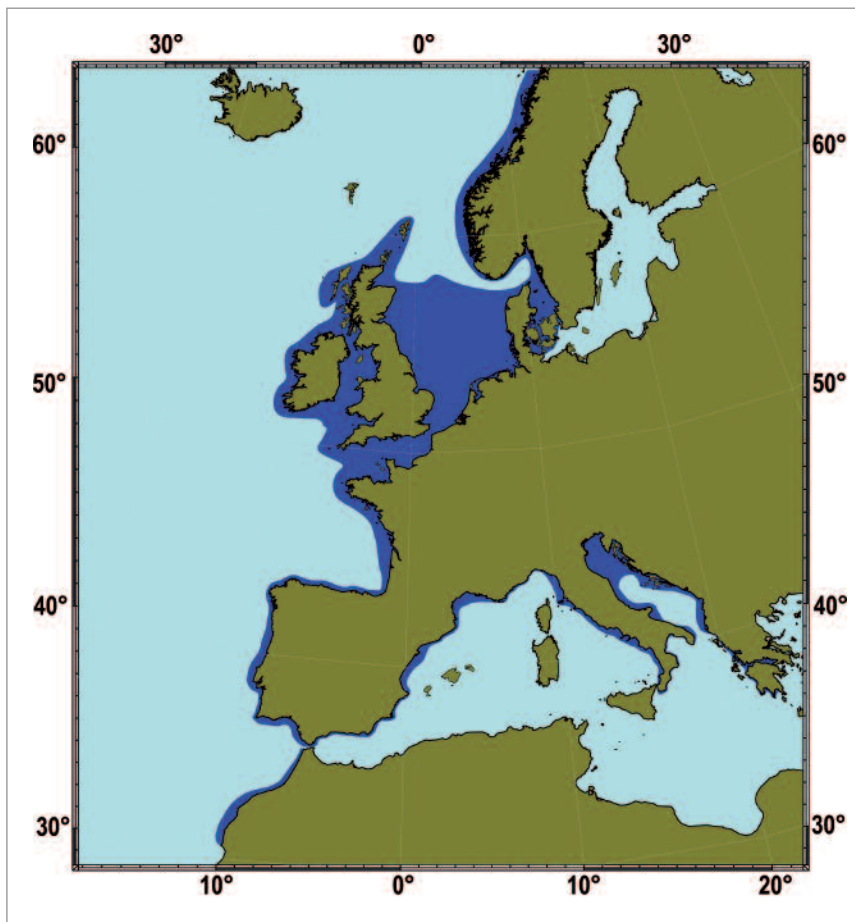


Figure 1: Distribution and fisheries for brown crab

## Organisation key

**ICES:** The International Council for Exploration of the Sea is responsible for providing scientific advice for North East Atlantic fishery management.

**EU:** The European Union is responsible for fisheries management within its Exclusive Economic Zone.

**SSMO:** The Shetland Shellfish Management Organisation was established in 1996 to manage Shetland's shellfish fisheries (within the six mile limit).

**SFCs:** 12 Sea Fisheries Committees around the coast of England and Wales have responsibility for the conservation and management of fish and shellfish stocks within their districts (out to 6 nautical miles from baselines).

**NMFS:** The National Marine Fisheries Service is responsible for the management, conservation and protection of living marine resources within United States waters.

**ASMFC:** Atlantic States Marine Fisheries Commission. Coordinates the conservation and management of the Eastern United States shared near-shore fishery.

**DFO:** Department of Fisheries and Oceans. Provides the scientific basis for conservation and sustainable economic use of Canadian fishery resources.

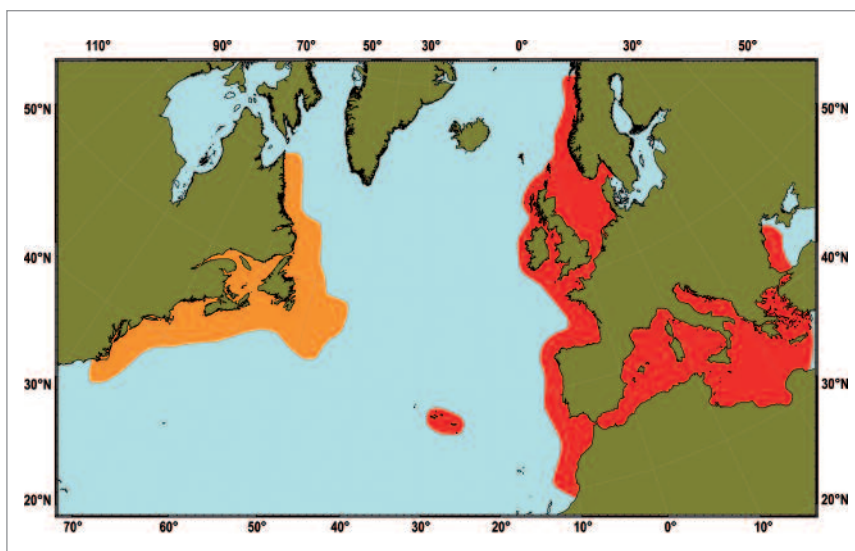


Figure 2: Distribution and fisheries for American and European lobster

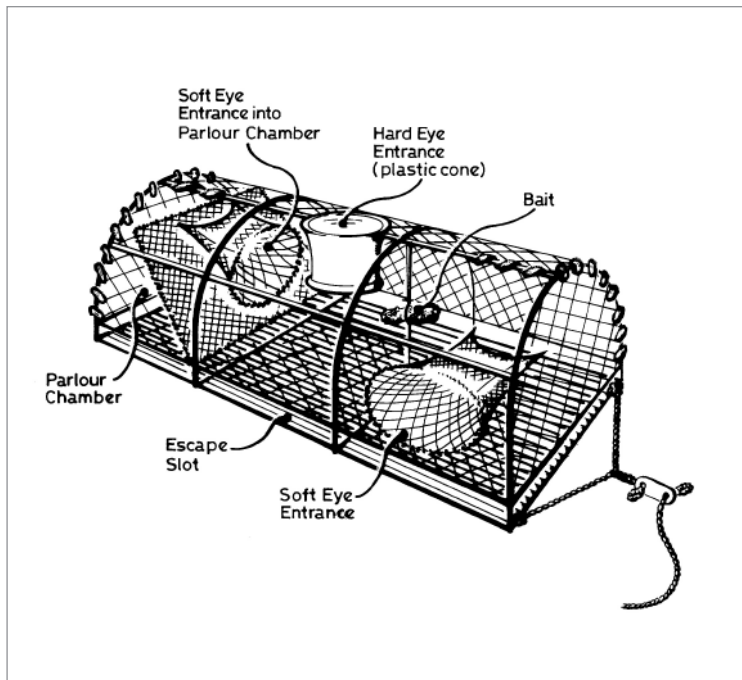
# Fishing gear and methods

Most crabs and lobsters are captured in baited pots (also known as traps or creels), but they can also be taken in trawls and static nets such as gill nets or tangle nets. Pots are either top-opening (inkwell pot) or side-opening (parlour pot). In European waters, pots are fished individually or in strings (fleets) of up to 100 pots, at each end of which is an anchor and buoy. The total number of pots used is determined by the size of the boat, the number of crew and

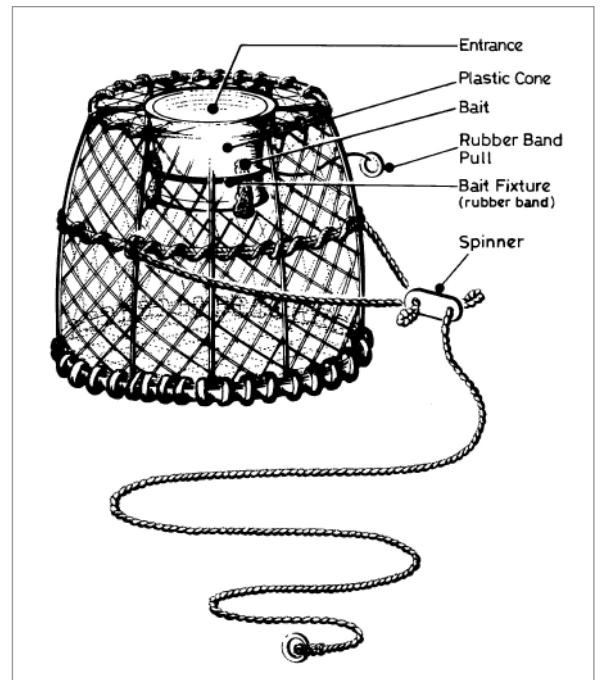
the fishing ground. Fishing with pots is considered to be a sustainable fishing method for two reasons. First, there is a behavioural buffer against overexploitation, because capture relies on crabs and lobsters being attracted to the pot only when they are feeding. Second, fishing with pots has very little effect on the seabed or other organisms in the fishing area (7).

The main fishing season for crabs is from May to December, peaking in the autumn when mainly mature females are targeted. Potting for lobsters tends to be a localised activity and may occur throughout the year, but fishing is concentrated from April to October, particularly in inshore waters, when the water temperature is high enough to stimulate feeding activity.

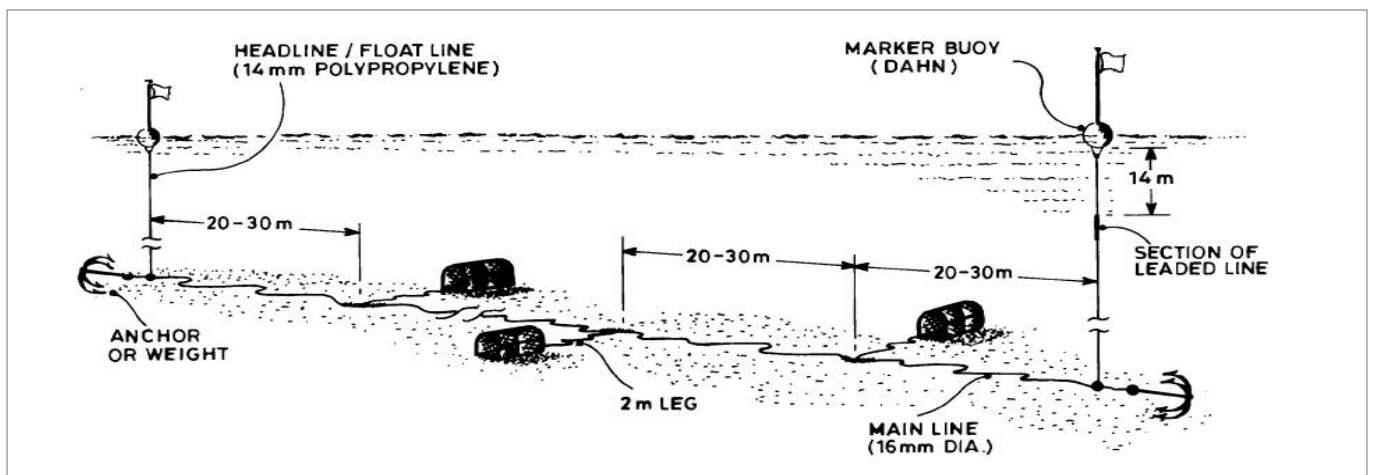
The largest vessels in the crab fleet are nomadic, working wherever the fishing is best, and they are fitted with vivier tanks for storing crabs live.



**Figure 3:** Parlour pots for crabs and lobsters; these are typically 0.8-1.0m long



**Figure 4:** Traditional inkwell ; these are typically 0.6-0.8m in diameter



**Figure 5:** Typical gear configurations; the length of a 'string' of pots would vary according to environmental conditions

# Management and conservation

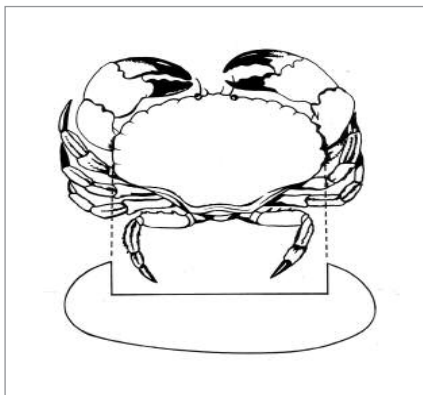
Crab and lobster stocks are managed primarily through fishing effort limitation and technical conservation measures. Generally, they are not managed through Total Allowable Catch (TAC) or quota allocation, except for the offshore canyon fisheries for American lobster.

## Technical management measures

In Europe, crabs and lobsters are managed at EU, national, regional, and local level. For both species, the key technical measure is the minimum landing size (MLS),

## Technical measures for crabs

The MLS for crabs (measured as in Figure 6) varies around the UK coast because of regional variations in growth rate, size at first maturity and in marketing practices. In addition to licensing and MLS regulations, EU or national legislation on crabs includes bans on landing berried females and soft pre-moult or recently moulted crabs. In certain areas, crabs are taken as a by-catch in static gear such as gill nets. As it is difficult to remove them whole from the nets they are often de-clawed and only the claws are retained. This activity is regulated under EU legislation (10) and local SFC bye-laws.



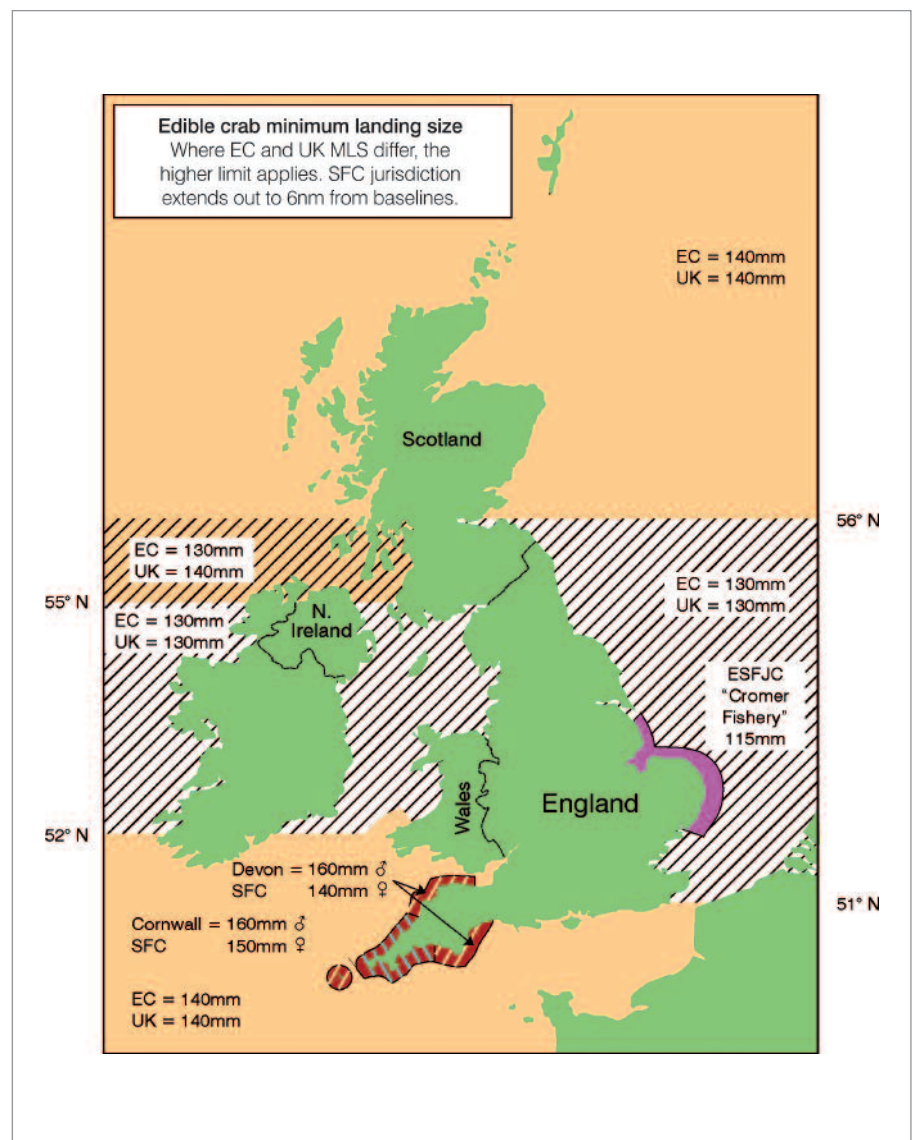
**Figure 6:** Crabs are measured across the widest part of the carapace or shell

designed to ensure that animals are allowed to grow to maturity to sustain breeding stocks. This is a particularly effective way to manage crab and lobster fisheries, as undersized animals returned to sea from pots suffer very low mortality rates, although mortality rates are probably higher in trawl and net fisheries.

## Licensing

UK pot fisheries for crabs and lobsters are controlled through a shellfish licensing scheme, which restricts entry of new vessels to the

fishery, and requires returns of catch and fishing effort information. Local or regional management measures are enforced through Sea Fisheries Committee (SFC) (8) bye-laws that apply out to the 6 mile fishery limit around England and Wales. There are analogous local management bodies in Scotland, such as the Shetland Shellfish Management Organisation (9). However, most Scottish and Northern Irish crab and lobster fisheries are regulated by the Devolved Governments and EU legislation.



**Figure 7:** The MLS regulations for brown crab are variable (CEFAS)

# Management and conservation continued

## Technical measures for lobsters

Prohibiting the landing of V-notched lobsters and enforcing the MLS are very effective conservation measures for lobsters, as they allow breeding stock, or animals smaller than a certain size, to be returned alive to the sea.

For UK lobster fisheries, national management measures (11) prevent the landing of V-notched lobsters (see below).

Local legislation (within the 6 mile limit (8) may include: protection of berried (egg-bearing) females; prohibition on landing soft lobsters or parts of lobsters; restriction on the size of vessel; limits on the number of pots per vessel; escape gaps in pots to allow undersized animals to escape; closed areas; closed seasons; marking of gear and a higher MLS of 90mm carapace length.

EU minimum landing size regulations apply for most UK coasts. However, some SFCs (8) have introduced local bye-laws. This has resulted in South Wales, Devon, Cornwall and the Isles of Scilly setting an MLS of 90mm carapace length (Figure 8) within the 6 mile fishery limit.

## Canada and the USA

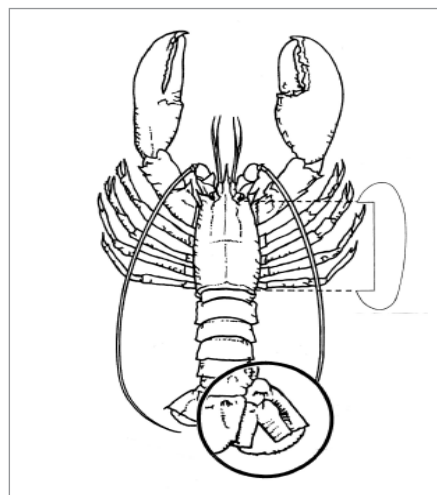
The lobster fishery in Canada and the USA has a wide range of management measures, which vary across fishing regions and are generally more restrictive than management measures in the European lobster fisheries.

Regulations include: limits on pot numbers per vessel; limited entry of vessels into the fishery; minimum and maximum landing sizes; prohibition on the landing of berried and V-notched females; closed seasons and areas; and escape gaps and devices to prevent 'ghost fishing' if pots are lost.

A number of new management measures have been introduced for the lobster fishery in the USA in 2009 including: changes to the lobster maximum carapace (shell) length restrictions; a requirement for all federal lobster dealers to submit weekly electronic reports for all lobster they purchase from vessel owners with federal permits; and a change to the v-notch definition applicable to several lobster conservation management areas (5).

## V-notching

Because egg-bearing or berried lobsters are not present all year round it is not always possible to distinguish breeding stock. Therefore, programmes are undertaken whereby the tails of breeding lobsters (mostly females, but sometimes males) are notched with a V-mark by the fishermen or SFC officers (8) and released (Figure 9). Some SFCs also prohibit the landing of berried lobsters from within their fishery districts (inside the 6-mile limit). This means you can always verify whether crabs and lobsters are landed legally by measurement and visual appearance. Note the legislation also forbids tampering with a V-notched lobster's tail to remove the notch. If you have any doubts speak to your supplier.



**Figure 8:** Measuring a V-notched lobster from behind the eye socket to the rear of the carapace



**Figure 9:** V-notching

# Management and conservation continued

Though European crab and lobster stocks are generally considered to be harvested sustainably, there are some concerns for the management of the fisheries:

## Uncertainties about stock structure

For both crabs and lobsters, assessments are carried out for stock units that reflect fishery characteristics and practicalities of management, rather than biologically defined stock boundaries. Management of biological stocks or populations would require international co-operation. For example, crabs in the western English Channel seem to share many characteristics with crabs from the Bay of Biscay, and it is probable that Irish Sea crabs have more in common with those on the Malin Shelf (SW Scotland), and to the west of Scotland, than with crabs found in the Celtic Sea.

Previous research to identify major crab spawning grounds and the possible existence of separate crab populations in different areas (12-14) is being extended by investigating the genetic structure of the crab stocks in UK waters and around Ireland, France and Scandinavia (15). A four year crab-tagging programme to determine growth and distribution in the English Channel commenced in October 2007.

## Lack of international assessments

Crab and lobster assessments in Europe are undertaken nationally, consequently, the assessments can lack the rigorous international peer review and evaluation of an ICES Working Group. Nevertheless, working links between fisheries scientists with interests in particular stocks help mitigate this potential shortcoming.

## Inaccurate landings and effort data

In the past, assessments of crab and lobster stocks have been compromised by a lack of data on landings and fishing effort; in particular, the number of pot hauls carried out on each fishing trip. Since 1 January 2000, however, vessels over 10m in length have had to complete EU log books documenting catch and fishing effort in the pot fishery. Since 2006, the UK national shellfish licensing scheme extended this requirement to vessels under 10m.

Improved fishery data should enable the UK to carry out better crab and lobster assessments in future.

## Oversimplified size-based assessments

Crab and lobster assessments in Europe are currently based on size-based data. Although age can be determined by measuring the accumulation of certain pigments (16, 17), it is not yet possible to carry out fast, routine ageing of samples to provide data for use in age-based assessment methodologies. This would enable the growth and harvesting (fishing mortality) rates to be estimated more accurately.

## Additional management measures

Measures that conserve young animals or breeding stock, such as a MLS or V-notching, need to be complemented by controls on fishing effort, such as limiting the number of pot-days, otherwise there is a risk that the stock will become overfished.

The current UK licensing scheme restricts entry of new vessels into the UK crab fishery, but it does not restrict the numbers of days or the number of pots that each vessel may fish. Agreement needs to be reached as to how this may be achieved.

In the UK lobster fishery, there is general consensus that further national measures to safeguard the spawning stock would be beneficial, possibly by introducing a maximum landing size or increasing the current minimum landing size.

# Product characteristics

Crabs can be sold cooked whole or as processed products. 'Dressed crab' generally uses picked meat from larger crabs, repacked into smaller shells. Because of the high minimum landing sizes in force, there is a shortage of suitable small brown crab shells. Some producers have resorted to filling shells from other crab species with brown crab meat, which has led to enquiries from customers about the provenance of the product.

European and American lobsters are usually sold whole and alive. The colour of live European lobsters ranges from powder blue to midnight blue-black, and they tend to have

elongated claws that are white along their serrated edges. The American lobster is generally a muddy brown or green colour, and has more rounded claws tinged with red along the cutting and crushing serrations.

It is important to source American lobsters from an authorised supplier. They can carry a disease, *Gaffkaemia*, which can cause rapid death among European lobsters but is not harmful to humans. *Gaffkaemia*-type organisms are present, but not prevalent, in European waters, and there are strict regulations that apply to storing American lobsters in tanks in the UK to prevent the spread of the disease.

## Supply chain standards

Responsible practice in the chilled and frozen supply chain depends on using appropriate catching methods and correct chilling or freezing, processing and handling throughout the chain. Seafish has developed standards which cover these aspects from capture to retailer:

- **Responsible Fishing Scheme** Sets good practice standards for fishing vessels based on British Standards Institution specifications (BSi: PAS 72:2006); and
- **British Retail Consortium (BRC) Global Standard and Safe and Local Supplier Approval (SALSA) certification** Designed to raise standards in the seafood processing and wholesaling sectors.

## Seafish Responsible Sourcing Services

This guide is one of a series of Responsible Sourcing Guides produced by Seafish. Further guides and information on fisheries conservation and gear technology may be found at: [www.seafish.org/b2b/rss](http://www.seafish.org/b2b/rss)

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