The spider crab (Maia brachydactyla) is a very large species of crab with a circular, convex carapace which is bordered by strong tapering spines. It is red, brownish-red, or yellowish in colour and the body can grow up to 20 cm long and is often covered with attached algae. Spider crab are found on coarse sand mixed grounds and bedrock on the open coast, and also in deep tide pools and shallow sublittoral. Within the UK, they are predominately found in the west and south-west coasts (Wilson, 2008).

The name change from Maja squinado to Maja brachydactyla follows studies which concluded that Maja squinado was in fact a separate species with a more southerly distribution.

Unlike crabs and lobsters spider crabs cease growing once maturity is reached (known as terminal moult). Spider crabs feed opportunistically, behaviour at least partly enforced by seasonal migrations that they perform. During the autumn and winter months, adults are usually found in offshore locations, usually between 40m and 80m depth (occasionally down to 120m). During the spring and summer, they are found further inshore usually in depths less than 10m and occasionally even in tidal water. Females may spawn up to twice in any one season and at 2-3 weeks the larval stage is shorter than for crabs and lobsters.

Fisheries

Spider crab is the subject of commercial fishery, with over 5,000 tonnes caught annually, more than 70% of it off the coast of France, over 10% off the coast of the United Kingdom, 6% from the Channel Islands, 3% from each of Spain and Ireland, 1% from Portugal, although official production figures are open to doubt.

In the UK this species is targeted on the South and West coasts using conventional crab pots but with a slightly larger entrance to allow this relatively large crab to enter the pot, and also with large mesh tangle nets. Based on a five year average, creels/pots land the majority of the catch (87% by weight), followed by gillnets (11%). It is very seasonal occurring during the period April to August.

References


Spider crab off UK coasts has been scored a high risk. There are difficulties of finding an easily monitored and reliable indicator of stock status so abundance trends are unknown. Growth rates are uncertain but the minimum conservation reference size (minimum landing size) is potentially instrumental in conserving spawning stock.

The management of spider crab off West and South west UK coasts has been scored a moderate risk. This is because the management control in place, the minimum conservation reference size (minimum landing size), is rational in relation to the life-history of
the species. Whilst this measure is enforced there is no monitoring of stock status.

**Bycatch**

### less risk  ●  ○  ○  ○  more risk

**The bycatch risk of this fishery has been scored as low risk.** This is because significant discarding of undersized spider and undersized bycatch of edible crabs and lobster occurs, but these are released alive on hauling and survival rates are believed to be high. Catch of protected, endangered and threatened species is minimal. “Ghost fishing” by lost pots is not considered to be a problem.

**Habitat**

### less risk  ●  ○  ○  ○  more risk

**The habitat risk of this fishery has been scored as low risk.** This is because evidence suggests fishery impact on the bottom is restricted to some abrasion caused by dragging pots and anchors during hauling and tide and wave action (Grieve et al., 2014). The static gear used to prosecute the fishery is in contact with the bottom, but unlikely to have significant interaction with vulnerable habitats. Vulnerable marine habitats are protected within Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR, 2013) and any kind of fishery there might be controlled if deemed necessary.

**Outlook**

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Time trends

Catch trends for UK landings are shown in Figure 1.

Figure 1 Landed catch of spider crabs (live weight tonnes per annum) for small vessels (<10m) and larger vessels >10m for UK fleet

There are difficulties of finding an easily monitored and reliable indicator of stock status. Catches are not easily related to abundance because market conditions and other factors determine whether the species is targeted.

Stock structure and recruitment

The average size at maturity is 80 to 170 mm (carapace length) and the minimum conservation reference size (effectively the minimum landing size) in European Union waters of the North East Atlantic is 120 mm (see Figure 2 for measurement). This is increased within the Cornish Inshore Fisheries and Conservation Authority District to 130 mm (Davis and Trundle 2008; see also www.cornwall-ifca.gov.uk). Survival is considered to be good so there is opportunity for spawning before retention.

Data gaps and research priorities

As discussed above there are difficulties finding easily monitored and reliable indicators of stock status so the above assessment is tentative.

Figure 2; Carapace length (CL) measured along the midline of the shell from the edge of the carapace between the rostrums to the posterior edge of the carapace is the correct dimension to measure for minimum conservation reference size (minimum landing size) of spider crab from EU 850/98 as amended 29th May 2015.

References

Davis, S and Trundle, C (2008)
A short investigation into size frequency distribution of spider crab Maia squinado within the CSFC District Cornwall Sea Fisheries Committee Research Report R200801
Stock harvesting strategy

The European Union imposes a minimum landing size of 120 mm for spider crab, and some individual countries have other regulations such as a closed season in France and the Channel Islands. The Cornish Inshore Fisheries and Conservation Authority has implemented a byelaw increasing the minimum landing size to 130 mm within the 6 mile limit of Cornwall.

Surveillance and enforcement

This is a non-quota species which are more likely to be fished by inshore vessels in inshore waters are subject to less Monitoring Control and Surveillance. In part this is because there is less scope for infringement; the minimum conservation reference size is relatively easy to enforce.

The requirements for surveillance and sanctions for infringements are laid down in the EU Control Regulation (EC) No 1224/2009, which amended previous similar regulations. The use of VMS system is a legal requirement for all vessels with overall length above 12m for EU vessels.

Council Regulation 1966/2006 requires fishing vessels to record and report catch data electronically. This began in January 2010 for vessels of 24 metres and greater overall length and the rest of the fleet followed, according to the timetable below (as set out in 1224/2009):

- As of 01 January 2010 vessels of 24 metres overall.
- As of 01 January 2011 vessels over 15 metres overall to 24 metres overall operating in Third Country Waters
- As of 01 July 2011 vessels of 15 metres overall to 24 metres overall
- As of 01 January 2012 vessels of 12 metres to 15 metres

Transmission or submission of fishing logbooks, prior notifications, transhipment declarations, landing declarations, sales notes, take-over declarations and transport documents are also under strict control.

The official introduction of the shellfish restrictive licence scheme in 2006 meant that all vessels 10m long and under landing shellfish, had to have a licence to do so. As part of this scheme they are required to submit monthly shellfish activity return (MSAR) forms which detail effort and landings.

Landings come from the official MMO data records which originate from sales note returns. Fishing effort is derived by MMO from Monthly Shellfish Activity Returns for <=10m vessels or EU logbooks for >10m vessels though because effort is estimated by MMO from historic information it is not clear if it represents current trends. Reporting systems have changed over time resulting in changes in data quality (predominantly improvements).

References

[https://www.gov.uk/government/organisations/marine-management-organisation] [Date accessed: 31-Dec-15].
Targeting and behaviour

Spider crabs are caught in the U.K. using fleets of baited static gear – pots or traps. Spider crabs are usually targeted using ‘inkwell pots’ with larger entrances (270- 350 mm) than those used to catch crabs and lobsters.

![Figure 1. Top, typical inkwell pots Bottom – typical gear configuration (length of ‘string’ will vary) NB lower figure is illustrative of configuration though these are not inkwell pots (Seafish, 2015).](image)

Traditionally pot frames were wood, but in recent years pots are steel-framed, or sometimes plastic, and covered with netting (MSC 2007). The bottom bars are usually spaced 2-2.5 cm. On average pots last between 3-7 years whilst twine may last 2-5 years with maintenance.

Fishermen typically hauled pots every 24-48hrs (weather permitting) to harvest any catch and replace bait. Gear can often be re-set in the same place for several days – although there is typically sufficient deck space to allow one or two fleets to be moved to new locations. The target crustaceans crawl into the pots voluntarily, but the pot is designed in such manner that the entrance serves as a non-return device. “Ghost fishing” occurs very rarely and then only for limited duration. Inkwell pots allow their content to escape after about 3 days (Swarbrick and Arkley, 2002).

Evidence of bycatch risk

Mesh size and bar spacing allow juveniles to escape and undersized species can typically be released alive when the catch is sorted together with non-commercial crustaceans like hermit crabs or shore crabs. There might be occasionally an unquantified but likely small by-catch of finfish (MSC, 2007). The bycatch level in pot fisheries everywhere around U.K. is very low, and was estimated at 1% of total catch around Shetland Islands (not including discards of undersize or berried retained/ target species MSC, 2012).

Species occasionally seen in pots include other crab species (velvet, green, hermit, etc.), whelks, octopus and some fish species, mainly Ballan wrasse, rockling, dogfish and conger eel and occasionally others. Discard survival is high. Rare, threatened or iconic species are rarely caught in the pot fishery though leatherback turtles have very occasionally become entangled in pot ropes (Pierpoint, 2000). Bycatch are usually alive and undamaged and can be returned to the sea alive (Swarbrick and Arkley, 2002; MSC, 2007).

Mitigation measures

Bycatch of undersized spider crab, crab and lobsters is regulated by a minimum landing size (MLS)*. Landing of other stages (soft, crippled, v-notched or berried edible crab or lobster*) can also be prohibited. Minimum landing sizes also apply to other commercial species taken with edible crabs (e.g. velvet crab) (MSC, 2012). In addition, some Fishery authorities stipulate the use of escape gaps designed to allow escape of undersized edible crab and lobsters fitted to pots worked within their jurisdiction (i.e. Devon and Severn IFCA, Kent and Essex IFCA).

*Please refer to management section for spider crabs and further specific information for edible crab and lobster catches.

References


Gear effects, targeting and behaviour

The pots are laid in fleets upon the benthic substrate, which tends to be harder ground such as gravel or gravely mud, in depths of around 20-30 m. Usual potting areas do not have strong tidal flows and currents rarely exceed 3 knots. Since pot fisheries are static the areas of seabed affected by each gear is likely to be insignificant compared with the widespread effects of mobile fishing gears and with the general effects of sediment transport in the area.

Evidence of habitat risk

There have been several studies looking into habitat impacts; evidence suggests that these range from insignificant to substantial cumulative damage from mechanical abrasion on deployment and retrieval of pots especially to sessile, slow-growing or friable flora and fauna such as ross coral or sabellaria (Grieve et al., 2015, ABPmer, 2015). Pot fisheries exert minimal impact upon ecological system structure and functioning (Eno, 2001, MSC, 2007).

A survey by Seafish in Norfolk, Southwest England and Scotland showed that most of interviewed fishermen had recovered traps lost for varying periods of time and they seldom contained any catch. In most cases they were damaged and had no residual fishing capability, so the problem of “ghost fishing” appears negligible [Swarbrick, J., Arkley, K. 2002].

Mitigation measures

Fishing which has occurred in specific location over many years is likely to result in the seabed ecosystem adapting to fishing activity. However, there are sensitive areas, mostly outside the core areas of the fishery which may be vulnerable and there has been substantial work over recent years to map and protect these areas. These initiatives have resulted in improvements in habitat mapping and risk assessment of the effects of trawling on the seabed.

Under the Marine Strategy Framework Directive (MSFD) from the European Union (Council Directive 56/2008), Member States have committed to aim towards ‘good environmental status’ (GES) for the seabed habitats by 2020. The Convention for the Protection of the Marine Environment of the North-East Atlantic (the ‘OSPAR Convention’), which was signed up to by 15 nations plus the European Union, is developing a coherent network of Marine Protected Areas to protect vulnerable marine habitats in the North-East Atlantic.


The UK Marine Management Organisation (MMO) is engaging in a programme designed to assess the effects of fisheries and implement management measures where sites are considered at risk. Similar initiatives are taking place in other European countries.

References


