

D&S IFCA's Scallop Spawning Research

Officers' Recommendations

That Members note the contents of this Officers' paper, and

That Members support the continued scallop spawning research in 2023.

Background

At the B&PSC meeting in October 2021, Officers provided information relating to issues raised by Members of the Committee. One area of concern was the lack of information on the scallop spawning period in the D&S IFCA's District. Officers explained that through the University of Plymouth Master's Course in Marine Conservation, they had proposed a project for a MSc student to investigate the scallop spawning period. Research was conducted by D&S IFCA's Environment Officers and a student from April to October 2022 to provide evidence on the scallop spawning season in Devon. The final report for this research will be published by the end of March 2023. This paper provides an executive summary of the outputs from that research.

Executive Summary of Scallop Spawning Research

This study investigated the timing of king scallop (*Pecten maximus*) spawning in South Devon between 8th April – 14th October 2022. Approximately weekly, samples of 20 scallops per site were obtained from commercial divers operating in each of the three study sites in D&S IFCA's District: Lyme Bay, Torbay and Start Bay.

Scallops were dissected and three measures of spawning activity were calculated: (i) the gonadosomatic index (GI), (ii) the proportion of mature scallops in a sample, based on the visual appearance of the gonad, and (iii) the proportion of scallops classed as recently spawned (spent or recovering from spawning), also based on the visual appearance of the gonad. The GI describes the gonad (roe) weight as a proportion of total (shell) weight. High GI values are seen in scallops with large gonads (roe) relative to their shell weight; a sharp decrease in the value of GI indicates a decline in gonad condition associated with spawning activity and can therefore be used as an indicator of spawning condition and timing of spawning across a season.

A total of 1232 scallops were collected across 58 samples from the three study sites. The three measures of spawning activity varied substantially throughout the year but together suggest that most spawning activity occurs from early June through to September. Preparation for spawning peaks in early May, when the peak in GI (relative roe size) occurred. Relative roe size then declined steadily throughout the sampled period (to mid-October) as gonad weight decreased relative to total body weight. This change was associated with spawning from May throughout the summer season. The period in which more than 50% of scallops are mature (nearing spawning) in South Devon is likely to range between early April and the end of July but may extend into mid-August. The proportion of scallops classed as recently spawned increased rapidly from mid-May and peaked in early September, indicating the peak spawning period occurs between June and early September. Table 1 below indicates the timings of the scallop spawning cycle identified from the research.

Study Period & Findings Table						
April	May	June	July	Aug	Sept	Oct
	Largest GI – Peak in roe size (pre-spawning)	Steady decline in GI due to spawning				
Over 50% of scallops have large roes that are near spawning condition						
		Increasing numbers of scallops are spawning and seen in post-spawning condition (spent /recovering).				
			July – September period has some scallops with full roe (July) and overlaps with majority of scallops spawning			

The evidence also shows that scallops in a site do not all spawn at one time, that the spawning season may be relatively long, and that there is likely to be fine-scale variation in spawning condition and maturity within a site. Variation in timing of scallop spawning may be exploited by some fishers who may wish to target scallops with visually appealing roe that can command a higher market price. This may be possible by changing the depths at which fishing occurs.

The value of a closed season for scallops will depend on the life stage that is targeted for protection and the unique impacts of each method of fishing. The evidence collected suggests that a July–September closed season is likely to protect some individuals with full roes (gonads), particularly during July, and overlaps well with the peak in the proportion of individuals classed as having spawned (spent or recovering). The July to September closure is unlikely to afford protection to the majority of individuals in pre-spawning condition, with full roes (gonads) as this occurs earlier in the year.

There are many factors that may affect the scallop spawning cycle and there is likely to be interannual variation. To develop a robust evidence base, D&S IFCA Officers propose to continue the research from April to September 2023. All research proposed, including the sampling undertaken by the commercial diving sector and analysis of samples by Officers, is within the D&S IFCA's research budget. The additional evidence gathering work will inform D&S IFCA's management consideration and will feed into the national scallop FMP.

Background Papers

- B&PSC reports and minutes from meetings (D&S IFCA Website Resource Library)