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Stock Annex: Greater-spotted dogfish (*Scyliorhinus stellaris*) in subareas 6 and 7 (West of Scotland, southern Celtic Sea, and the English Channel)

Stock specific documentation of standard assessment procedures used by ICES.

Stock:	Greater-spotted dogfish (*Scyliorhinus stellaris*) in subareas 6 and 7 (West of Scotland, southern Celtic Sea, and the English Channel) syt.27.67
Working Group:	Working Group on Elasmobranch Fishes (WGEF)
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A. General

A.1. Stock definition

The population structure of catsharks inn general is poorly known, but tagging data indicate that movements are generally quite limited (e.g. Burt *et al*., 2013 WD for *S. stellaris;* Rodriguez-Cabello *et al*., 2004, 2007 for *S. canicula*). In relation to lesser-spotted dogfish, STECF (2003) assumed that "*separate stocks reside in separate ICES Divisions and that immigration and emigration from adjacent populations are either insignificant or on a par*" and that such species would best be managed as local populations (i.e. on the level of an ICES Division or adjacent Divisions).

The greater-spotted dogfish is a locally frequent inshore shark of the Northeast Atlantic continental shelf and is generally found from shallow water to depths of about 125 m on rough or rocky bottoms, including areas with algal cover (e.g. kelp forests) (Ebert and Stehmann, 2013).

ICES assesses the greater-spotted dogfish only in subareas 6 and 7. The species is locally common in parts of these subareas, and data are limited for other parts of the species' biogeographic range, where it occurs at lesser density. It is caught occasionally in surveys in the Biscay and Iberian ecoregions. In particular, it is commonly caught in the Spanish survey in the Cantabrian Sea, where the catch rate was 0.9 kg.haul^{-1} in 2016 (Ruiz-Pico et al., WD2017). In this area, the lesser-spotted dogfish is 15 times more abundant (15.7 kg.haul^{-1} in the survey), however the greater-spotted dogfish is one of the 6 most common elasmobranch from the shelf with *S. stellaris, Raja montagui, R. clavata , Leucoraja naevus* and *Hexanchus griseus*. In the Bay of Bi

The relationship between individuals occurring in other parts of the ICES area and subareas 6 and 7 are not known, but assumed limited.

A.2. Fishery

A.2.1 General description

the ICES area. They are usually of low commercial value and, with the exception of some seasonal, small-scale fisheries in some coastal areas, are not subject to target fisheries. Nevertheless, *S. stellaris* is presumed to be the catshark species most likely to be subject to limited targeting as a consequence of its larger size.

The retention patterns of catsharks in the North Sea and Celtic Seas ecoregions are highly variable, with varying proportions retained/discarded (Silva *et al*., 2013 WD). Larger individuals are landed for human consumption (more so in the southern parts of the ICES area). They are also landed in some areas as bait for pot fisheries, especially in fisheries for whelk *Buccinum undatum* or brown crab *Cancer pagurus* around the British Isles. Although data on the species identity of catch used as bait are limited, the use for bait is presumed to concern more *S. canicula* than *S. stellaris*.

The mùain countries reporting landings for the stock are France, Ireland UK.

A.2.2 Fishery management regulations

The species is not subject to TACs regulation and have no MRCS.

A.3. Ecosystem aspects

The greater-spotted dogfish is mostly an inshore species. It is usually more abundant on rough or rocky bottoms, including areas with algal cover, e.g. kelp forests (Ebert and Stehmann, 2013).

B. Data

B.1. Commercial catch

In most if not all of subareas 6 and 7, *S. canicula* is much more abundant than *S. stellaris*. The confusion between *S. canicula* and *S. stellaris* is likely to have a greater impact on the lesser abundant *S. stellaris*.

Following the WKSHARK2 workshop (ICES, 2016) and the dedicated data call where the 10-year time-series was requested, landings data for the period 2005–2015 were revised in 2016. The ICES estimates of landings are based upon an analysis of reported landings data. Every year since 2016, some reported data were corrected, allocation to the stock were consolidated based on expert knowledge.

It is unclear as to whether catsharks used for pot bait are reported in landings data.

Given the widespread discarding of catsharks, reported landings are not considered representative of catch. Nevertheless, the discarding rate of *S. stellaris* is probably smaller than that of *S. canicula*.

The length range of *S. stellaris* caught by the French fleet in 2012–2014 was 44–124 cm.

B.1.1 Landings data

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B.1.2 Discards estimates

Like other species in the Scyliorhinidae family, *S. stellaris* has a potentially high discard survival. Owing to its coastal distribution the discard survival of *S. stellaris* may even

by higher. As a consequence, landing data are likely to be more representative of dead removals than total catches.

In 2017, several aspects of the discards were investigated in WKSHARK3, however overall estimates of discards were not achieved (ICES, 2017b).

B 1.3 Recreational catches

There is no data on recreational catches.

B.2. Biological sampling

The greater-spotted dogfish is the largest catshark in the Northeast Atlantic, growing to at least 130 cm. It is demersal and oviparous (egg-laying) species. Egg-capsules are elongated and are occasionally found stranded at the coast. Egg-capsules are about 13 cm long.

Data on life history traits of *Scyliorhinus stellaris* are missing. Available length-weigth relationships are given below.

Table B.2.1. Length-weight relationship of Scyliorhinus stellaris

Relationship	Number of fish	Size range (cm)	AREa	Source
$W=0.039*L^{2.9755}$	92	14.1-71.7	Aegean sea	Bilge *et al*. (2014)
W=0.0004*L3.6397	8	41.5-85	Aegean Sea	Tüker et al., (2018)

B.2.1Maturity

Catsharks may have protracted spawning periods, with *S. canicula* bearing egg cases observed for much of the year. Data on the spawning period of *S. stellaris* are missing. If the egg-laying season is protracted like is *S. canicula,* this may result in no apparent cohorts in length distributions. However the more coastal habitat of S; stellaris may imply a stronger seasonality of reproduction.

Although, data for *S. stellaris* in the Atlantic may be lacking, studies in the Mediterranean suggested that for both sexes length-at-maturity ranges from 76–79 cm (Capapé, 1977). As the species probably grows to a larger size in the Atlantic, length-at-maturity may also be larger in the Atlantic.

B.2.2 Natural mortality

No data. Age and growth parameters are not known.

B 2.3 Length and age composition of landed and discarded fish in commercial fisheries

B.3. Surveys

The greater-spotted dogfish is caught in surveys in the English Channel (divisions 7de) and in the Irish Sea and Bristol Channel (divisions 7af). The survey UK-7af-BTS has been used to assess stock trends.

Because of the habitat preferences of the species for rocky and inshore habitats, most surveys do not sample their main habitats effectively, resulting in low catch rates, especially the smallest size groups. The catchability of larger individuals may also be low in some survey trawls. The UK-7af-BTS is one of the few surveys to encounter this species regularly, especially around Anglesey and Lleyn Peninsula and in Cardigan Bay. Whilst *S. stellaris* is caught only occasionally in the North Sea ecoregion, it is captured regularly in the eastern Channel (Division 7.d). It is taken in small numbers during the UK-7d-BTS and the French CGFS. Whilst data for the former are too limited to inform on trends in relative abundance, this species is observed in most years (Ellis, 2015 WD).

B.4. Commercial CPUE

No commercial CPUE is used for this stock unit.

B.5. Other relevant data

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C. Assessment: data and method

C.1. Choice of stock assess model

The stock is assessed from survey trends.

C.2. Model used of basis for advice

The basic for the advice is the variation of the survey index, the 2/5 rules is applied were the verage of the survey index during the to last years is compared to the average over the five precedings years.

C.3. Assessment model configuration

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D. Short-Term Projection

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E. Medium-Term Projections

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F. Long-Term Projections

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G. Biological Reference Points

No bilogical reference points are defined.

H. Other Issues

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H.5 Others (e.g. age terminology)

H.5.1. Species identity

Species identification is uncertain in fisheries data, with historical data being rarely species-specific. Further, common names may be confusing, with differences in usages in different agencies.

Several species of catshark (Scyliorhinidae) occur on the continental shelf and upper slope of the ICES. The lesser-spotted dogfish (or small-spotted catshark) *Scyliorhinus canicula*, the greater-spotted dogfish *Scyliorhinus stellaris*, the black-mouth dogfish (or black-mouth catshark) *Galeus melastomus* and the Atlantic catshark *Galeus atlanticus*. Other Scyliorhinidae occur in deeper waters (*Apristurus* spp. and Galeus murinus).

These species have been referred to as catsharks, dogfishes and other names including hounds. Names recognised by FAO may not be suitable to minimise confusions with *Scyliorhinus canicula* being referred to as small-spotted catshark and *S. stellaris* as nurse-hound. Therefore, ICES refers to these species using the English names given below, which differ from the FAO names (ASFIS file consulted on 13/06/2019).

SCIENTIFIC NAME	ENGLISH NAME	FAO NAMES
Scyliorhinus canicula	Lesser-spotted dogfish	Small-spotted catshark
Scyliorhinus stellaris	Greater-spotted dogfish	Nursehound
Galeus melastomus	Black-mouth dogfish	Blackmouth catshark
Galeus atlanticus	Atlantic catshark	Atlantic sawtail catshark

Because of their similarity and low value, landings of catsharks were traditionally reported in category groups (e.g. dogfishes and hounds) in some countries. In particular, lesser-spotted dogfish and greater-spotted dogfish may have been sorted by size rather than by species. In recent years more species-specific landings have become available but may remain uncertain.

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