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KIRSTY B

TENTATIVE SPIO KEY.

This key was devised using Helgi Gudmundsson's 1994 Workshop key as a broad basis for initially sorting *Spio* encountered in the Moray Firth area. However attempts have been made wherever possible to avoid the use of compound microscopy to distinguish the species present, thus avoiding the use of neuropodial hook structure as imperative information for correct identification. The observation of hooded hooks is hindered by the distortion created when the sheath obscures the secondary teeth, resulting in bidentate hooks appearing tridentate. Therefore additional means of splitting this Genus are needed to reduce errors in identification.

The Genus *Spio* is commonly found in both inshore and off shore samples and in most cases are fairly well represented. Unfortunately due to the ambiguity of several species, the lack of clarified literature and the tedious reliance upon hooded hook morphology at the initial splitting stages many individuals are either identified incorrectly or simply recorded as *Spio* sp..

Previous work with numerous individuals from Liverpool Bay, the Wash and Lyme Bay indicated characteristic features enabling the majority of species to be correctly grouped using stereomicroscopy. These various observational groupings were later further supported by their differing particle size data. Although this key is based upon general observations and is by no means conclusive, it has considerable importance to the biologist who cannot spend a great deal of time with each individual animal sampled. It must be stressed that there may well be intermediate species present within UK waters which are yet to be encountered. As further individuals are encountered their detailed descriptions and environmental parameters are recorded and used to update the existing database, giving rise to a genuine working key.

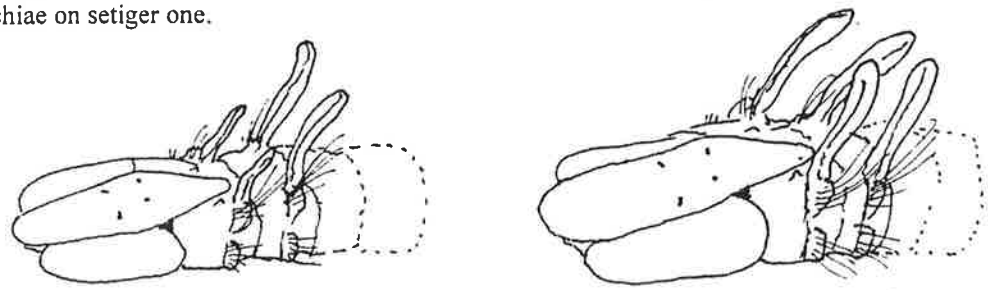
There were in excess of six hundred individuals sampled within the Moray Firth survey, all of which were identified using this key, they were then identified using Helgi's 1994 key (i.e. neuropodial hooded hook structure) and all the identifications matched. This gives validity not only to this key, but more importantly to Helgi's key upon which it was based. I would suggest that large numbers of *Spio* be identified by the process of making initial observational splits reinforced with detailed inspections of representatives of each grouping.

Four species are isolated in the key all of which are listed in the MCS directory, these being:

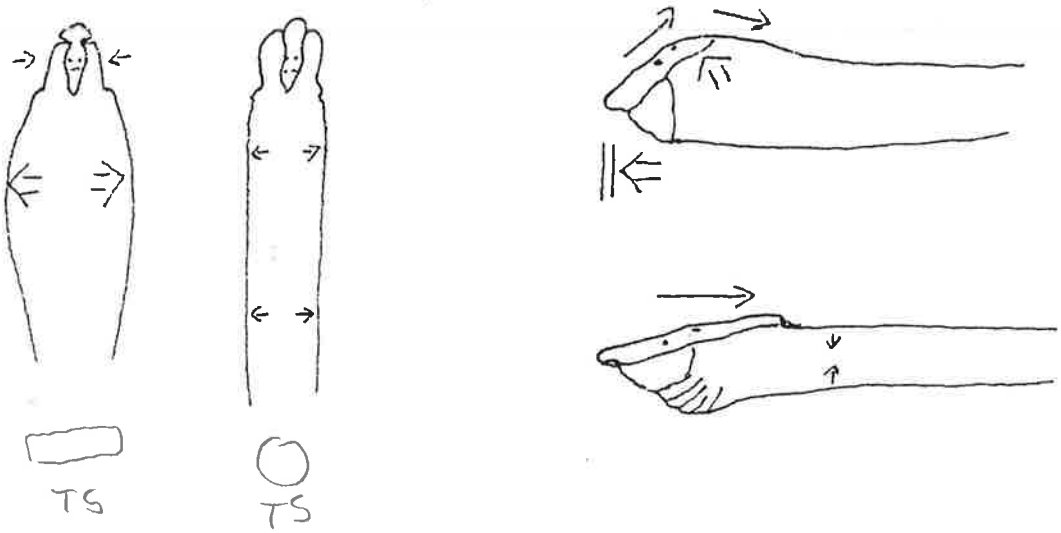
Spio armata
Spio decorata - rounded surface
Spio filicornis - flat
Spio martinensis

However, there is considerable variation in the individuals 'keying out' as *Spio armata*, hence I have made this an aggregate group. Regrettably this is one of the least well represented species and until sufficient individuals are sampled it remains unclear as to the nature of these variances.

There are several simple features mentioned which are used to identify each of the species mentioned above. Firstly the species are split into two groups of two by the relative development of the branchiae on setiger one.

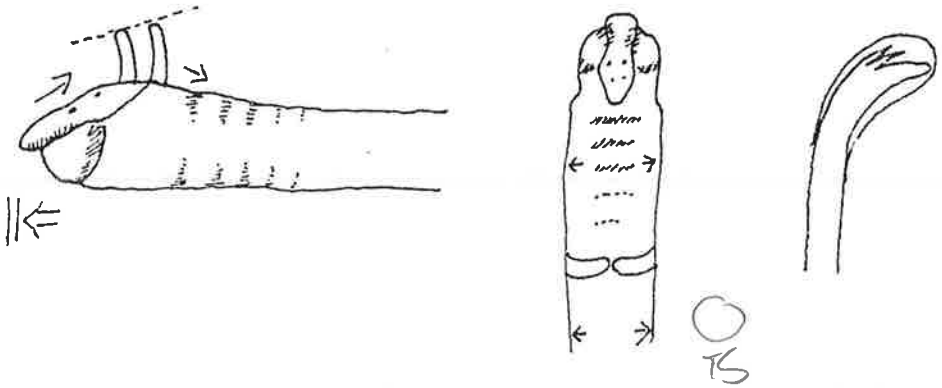


If the branchiae are missing or damaged the initial split can be achieved by observing where the neuropodial hooded hook commence, This can be seen using a stereomicroscope and careful use of lighting. Secondly, each of the species are separated by means of their general bodyforms.

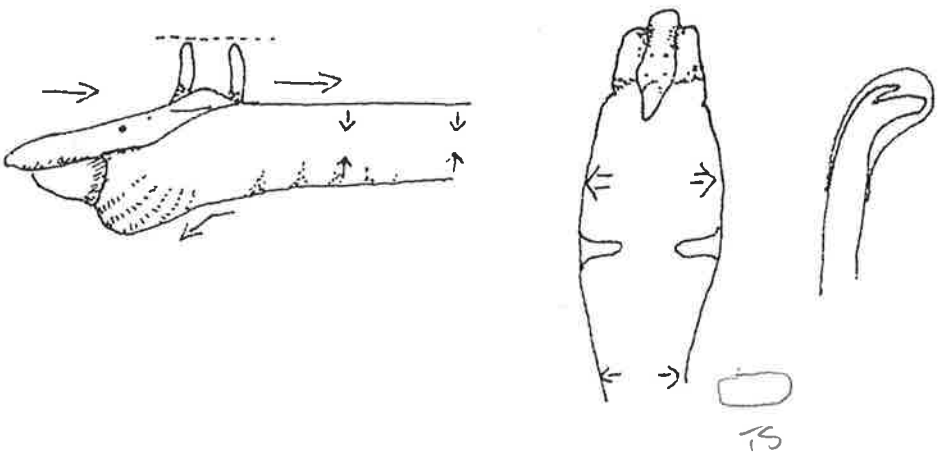


1. Branchiae of setiger one **not** reduced in size compared with subsequent branchiae; neuropodial hooded hooks commence on the 11/12th setiger.....**2.**
- Branchiae of setiger one reduced in size compared with subsequent branchiae; neuropodial hooded hooks commence on, or posterior to, the 13th setiger.....**3.**

2. Anterior setigers exaggerated dorsally; anterior dorsum **not** wider than posterior dorsum; branchiae reaching mid-dorsum; pigmentation[1] dark and present on peristomium, prostomium and as transverse bands on dorsal and ventral surfaces of anterior setigers; neuropodial hooded hooks tridentate .....***Spio decorata*?**



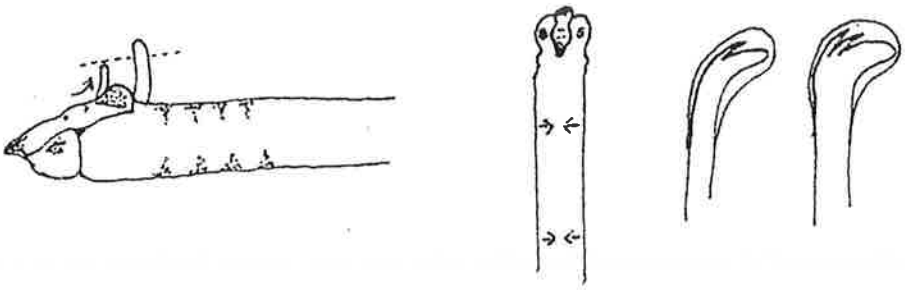
- Anterior setigers **not** exaggerated dorsally; anterior dorsum broad and flat, may be interrupted by raised 'keel[2]'; branchiae **not** reaching mid-dorsum; pigmentation light brown and present on peristomium, prostomium, anterior ventral surface and in ventral folds of the mouth; neuropodial hooded hooks bidentate .....***Spio filicornis***



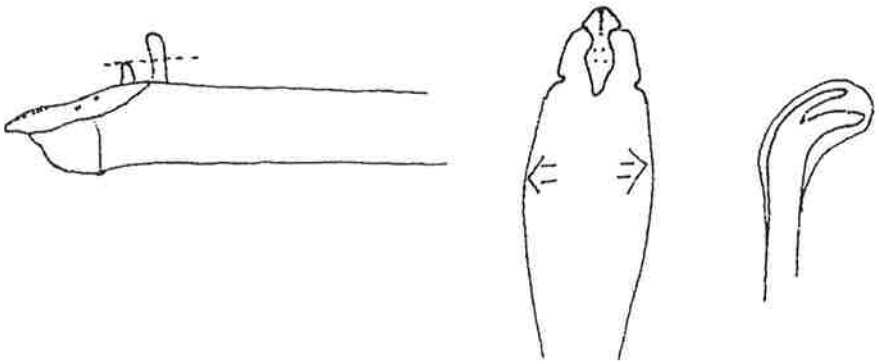
[1] may be lost or reduced in alcohol

[2] pronounced protuberance positioned on the posterior portion of the prostomium

3. Neuropodial hooks (tridentate and bidentate) commence on the 13/14th setiger; pronounced raised 'keel'; pigmentation dark and present on 'keel', peristomium, prostomium and dorsal and ventral surfaces of anterior setigers; setigers uniformed in width throughout.
.....***Spio martinensis***



- Neuropodial hooks (bidentate) commence posterior to the 14th setiger; 'keel' **not** pronounced; pigmentation may, or may **not**, be present in the form of a median stripe on the prostomium; prostomium 'spear-shaped'; anterior setigers wider and evenly tapering towards the peristomium .....***Spio armata* agg.**



Spio armata agg. variances to be noted:

- neuropodial hooded hook commencement
- branchiae length in relation to setiger width
- pigmentation
- general bodyforms- relative length, width and size
- environmental parameters

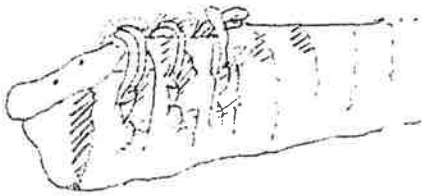
Spio decorata?
(Moray Firth)

Large / adult individuals with characteristic blunt prostomium which is darkly pigmented along with anterior dorsal and ventral segments. Neuropodial hooded hooks tridentate and beginning on the 11/12th setiger. Branchiae of setiger one fully developed. Branchiae reach the mid-dorsum.

Small / juvenile individuals with prostomium pointed/less blunt. Pigmentation as in larger specimens but faint or absent. Neuropodial hooded hooks tridentate and beginning on the 11/12th setiger. Branchiae of setiger one fully developed.

Both above found in clean and muddy sand, very common offshore. Small individuals sampled in very large numbers at coastal inshore location (Moray Firth Survey).

Individuals sampled from: Liverpool Bay, Selsey, Swansea Bay, Moray Firth, Exmouth, Sellafield, Tees, Lyme Bay and Bridlington.
Sediment types: Muddy gravel, muddy sand and mud.
Location: Offshore and inshore.

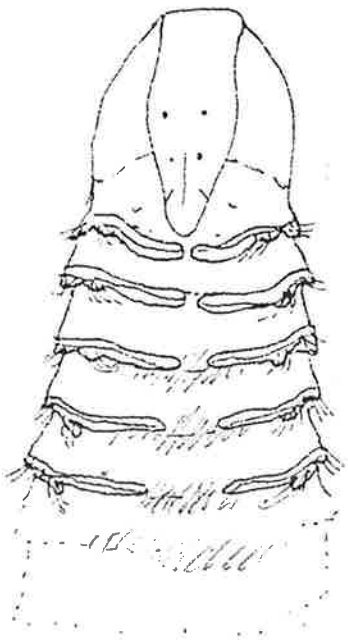


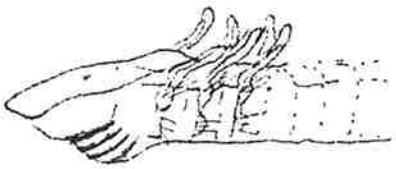
Spio filicornis
(Moray Firth)

Large individuals, uniquely pigmented in buccal grooves and also on anterior ventral surface and branchiae. Keel visible and may be distinct. Branchiae do not reach the mid-dorsum. Neuropodial hooded hooks bidentate and beginning on the 11/12th setiger. Branchiae of setiger one fully developed.

Only a few individuals sampled in muddy sand within Moray Firth Survey, there were no other accompanying spio species at these sites. Offshore species.

Individuals sampled from: Off Southwold, Moray Firth, North-east Wash, Exmouth, Liverpool Bay, Severn and Lyme Bay.
Sediment types: Sand and gravel.
Location: Offshore.





Spio armata agg.
(Moray Firth)

Large, straight and more sturdy specimens than other species sampled. Pigmentation limited to a faint brown stripe down the centre of the prostomium. General anterior structure 'Spear-shaped' and much broader dorsally than *S. decorata* and *S. martinensis*. Head much smaller than anterior dorsum and poorly blended to wider anterior setigers. Notopodial pre-setal lamellae with 'finger-like' process present. All individuals sampled with a thin mucus tube and small adhering particles (contrasting with other debris-free Spios sampled within the Moray Firth Survey). Neuropodial hooded hooks bidentate and beginning on the 19th setiger. Branchiae of setiger one reduced to half size. Branchiae, posterior to setiger one, only one quarter to one third the width of the dorsum.

Only found in samples of clean sand and in low numbers accompanying *S. decorata*. Possibly *Spio goniocephala*. Offshore species.

Individuals sampled from: Moray Firth.
Sediment types: Clean sand.
Location: Offshore.

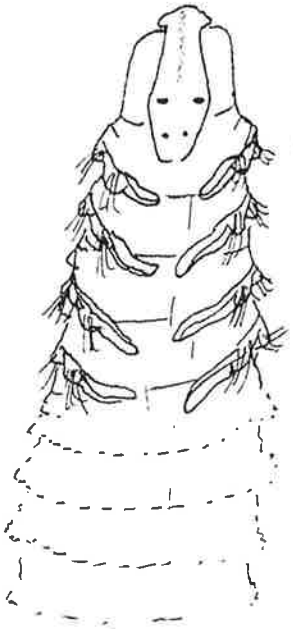
***Spio armata* agg.**
(LIVERPOOL BAY)

OR V FAINT DN STRIPE PRESENTION

Large, robust specimens without pigmentation. Head not obviously smaller than anterior setigers, unlike the Moray Firth Spio armata agg. individuals. Not as broad anteriorly as Moray Firth specimens. Notopodial pre-setal lamellae with 'finger-like' process present. Neuropodial hooded hooks bidentate and beginning on the 16/17th setiger. Branchiae of setiger one reduced to half size. Branchiae, posterior to setiger one, approximately one half the width of dorsum.

Several individuals sampled in gravel, offshore.

Individuals sampled from: Dolphin, Needles, Selsey, Liverpool Bay, North-east Wash and Lyme Bay.
Sediment types: Sand and Gravel.
Location: Offshore.



Spio martinensis
(WASH)

Small, long, thin , characteristically thread-like Spios. Pigmentation dark and present as two dorsal spots on peristomium, banding on anterior dorsal and ventral setigers and on keel. Keel pronounced. Neuropodial hooded hooks tridentate and bidentate and present from the 13/14th setiger. Branchiae of setiger one three quarter length and half width of others.

Sampled in large numbers at muddy inshore and intertidal sites. Very common.

Individuals sampled from: Tees, Hamford Water, Dee, Greatham Creek, Wash, North-east Wash, Sellafield, Humber, Off Gt. Yarmouth, Blakeney and Southend.
Sediment types: Muds.
Location: Inshore and intertidal.