# Identification key for Nephtyidae (Polychaeta) of the Eastern Atlantic and the North Polar Basin

N.Yu. Dnestrovskaya[1] & I.A. Jirkov[2]

*Department of Hydrobiology, Moscow Lomonosov State University, 119899, Moscow, Russia.*
*e-mail: [1]ndnestro@mail.ru; [2]ampharete@yandex.ru*

ABSTRACT: the new user-friendly identification keys for Nephtyidae of the Eastern Atlantic and the North Polar Basin is proposed.

KEY WORDS: identification key, Polychaeta, Nephtyidae, Eastern Atlantic, the North Polar Basin.

The keys cover the shelf of the Eastern Atlantic (to the north, from the Bay of Biscay) and the North Polar Basin (shelf and deep water) and includes more than 100 species. Additional general faunistic works treating Nephtyidae in the North East Atlantic and the Arctic include Fauvel (1923), Hartmann-Schröder (1971, 1996), Ravara *et al.* (2010) and our book (Jirkov, Dnestrovskaya, 2001).

## Introduction

The nephyid polychaeta are bristle worms of small to medium, seldom large, size. The largest species in British waters may reach a length of about 10 cm, but most species are usually 2–5 cm in length.
Nephyid polychaetes can be found from the intertidal to abyssal depths, in all sediments, but especially in soft sediments. All of them are borrowing deposit feeders, usually sub-surface.

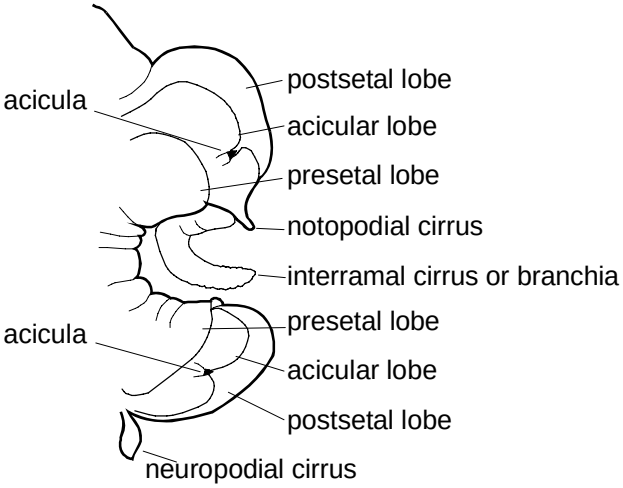
## Main terminology (see figures)

Nephyids are rather uniform and often difficult to identify. Shape of parapodial lobe varies along the body. So check you are investigating the parapodia of the correct segment (which is recommended in the key or key pictures). All parapodia and their parts are given in anterior view, unless other wise stated. Not all characters are developed in juvenils, so it is not possible to identify all worms, only those above certain size, which is different in different species and even places.

Also it is important to mention that the shape of parapodia depends on whether they are investigated using slides or without them. Placing parapodia between sheet of glass (on slides) changes the shape of the lobes and their comparative size, and this change depends on distance between glasses. All descriptions and drawing given in the present key have been made without preparing slides.

## Some remarks to key

It is strongly recommended to identify a several specimens together rather than a single individual and several parapodia and better parapodia from both sides of worm rather than a single one. Especially segments where branchiae start should be checked in both sides of worm. Using methyl blue often makes morphological characters more visible. For all characters mentioned in the key is not necessary to prepare slides and use compaund microscope. Even geniculate chaetae of *N. cirrosa* usually can bee seen under stereomicroscope with some experience, though initially better to check under compaund.

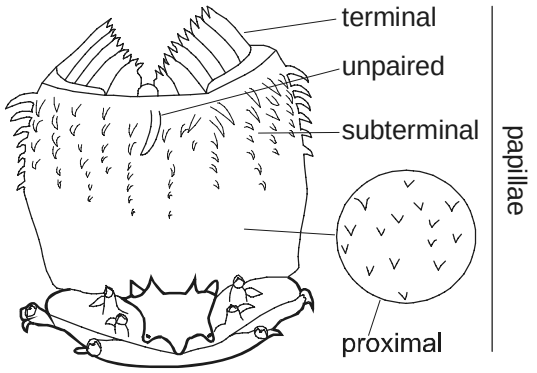



All characters mentioned in the first sentence of each split in the key are obligate. Characters mentioned in the second sentence are not obligate, but sometimes can help in identification. Species range is given for each species.

No one key is complete and perfect. If you have any difficulties or troubles, do not hesitate to contact us by e-mail or by any other way.

## Some taxonomic remarks

1. The difference between *Micronephthys* species seems indistinct. However, it is necessary to have in mind that these characters refer to species, not to certain populations in certain places. In a case of co-occurrence the difference is clear, otherwise misidentification increases. For details on Northern Europe see Dnestrovskaja, Jirkov (2010), for British waters the problem needs to be investigated as only two species *M. neotena* and *M. harmannshcroederae* are expected here.

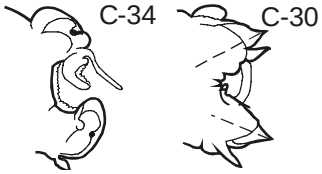



2. Ravara *et al.* (2010) changed generic diagnosis of *Nephtys* and *Aglaophamus* thus *N. pulchra* became *A. pulcher*. We agree the whole family needs revision and probably will need to change generic diagnosis, but their diagnosis do not looks convenient. Distinct charactrs (e.g. shape of branchiae) have been put below subjective characters (e.g. acutely pointed acicular lobes) which can be confusing. Therefore we have not accepted these changes and wait a more reasonable approach.

## Abbreviations

S — segment.
C — chaetiger.
Abbreviation with number means this very segment, i.e. C2 means the second chaetiger.
All figures are anterior view if otherwise not stated.

1. Branchiae absent, no more than 49 S. Up to 6 mm long.....***Micronephthys stammeri***
Lusitanian.
— 3–15 branchipherous chaetigers with (from S5–S8 to S9–S19), no more than 34 S. Up to 16 mm long.....***Micronephthys*** (partim)...2
— Usually several tens branchipherous chaetigers, up to 100 S or more. Up to 200 mm or more .....3
In minute worms sometimes number of segments can be low, but just before pigidium is a growing zone with numerous forming segments
2. Branchiae on 5–9 S: from S6–S9 till S10–S14 .....***Micronephthys minuta***
Arctic shelf.
— Branchiae on 5–13 S: from S5–S7 till S11–S18.....***Micronephthys neotena***
High boreal shelf.
— Branchiae on 14–15 S: from S5–S6 till S19.....***Micronephthys hartmannschroederae***
?Low boreal shelf.

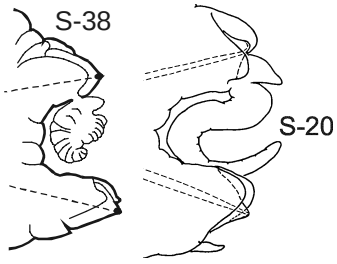



3. Branchiae curved outwards.....***Nephtys***...4
— Branchiae curved inwards (look for undamaged parapodia!)...17

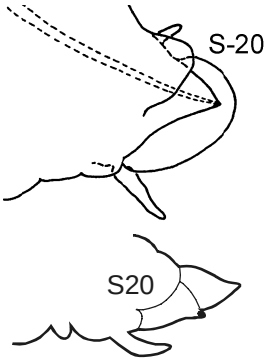
4. Neuropodial postsetal lobes almost equal to acicular ones, at least in middle and posterior segments .....5
In *N. hystricis* neuropodial postsetal lobes of anterior segments, especially before S20 distinctly longer than acicular ones!
— Neuropodial postsetal lobes of middle segments (between S30 and S45) distinctly longer than acicular ones.....9

5. In middle part of the body (after S20) acicular lobe distinctly bilobed .....6
— In middle part of the body (after S20) acicular lobes rounded or conical.....7

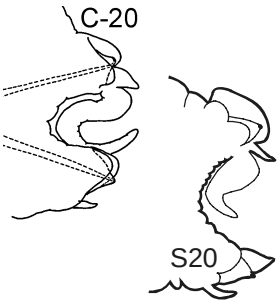

6. Branchiae start from S5–S6; notopodial cirrus of middle segments short .....***Nephtys pente***
Arcto-boreal upper shelf.
— Branchiae start from S8–S12 (rarely S7); notopodial cirrus of middle segments long .....***Nephtys ciliata***
Arcto-boreal lower shelf.



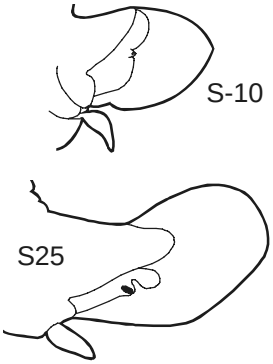

7. Presetal lobes rudimentary; branchiae of middle segments often (not always!) more or less foliaceous .....
.....***Nephtys paradoxa***
Arcto-boreal lower shelf.
— Presetal lobes equal to acicular or shorter, but not rudimentary; branchiae cirriform.....8




8. Anterior neuropodia with small papilla; notopodial postchaetal lamellae well developed, bilobed at least in middle parapodia; pharynx with 14 rows of 10–15 subterminal papillae, extending to base of pharynx .....***Nephtys pulchra***
Low boreal and lusitanian, shelf.
— Anterior neuropodia without papilla; pharynx with 22 rows of less than 10 subterminal papillae (usually up to 5–7), at most reaching halfway along the pharynx .....10

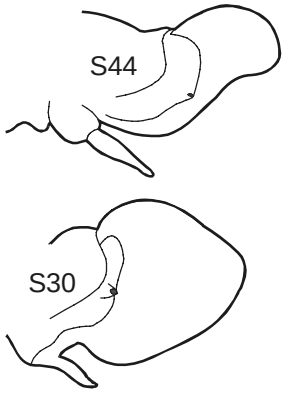



9. Branchiae start from S9–S10 (rarely S8–S11); presetal lobes of middle segments (between S15 and S45) simple; neuropodial postsetal lobes of segments before S20 equal to acicular ones ..... .....***Nephtys incisa***
High boreal lower shelf.
— Branchiae start from S6–S7; presetal lobes of middle segments (between S15 and S45) bilobe; neuropodial postsetal lobes of segments before S20 distinctly longer acicular ones .....***Nephtys hystricis***
Boreal upper shelf.

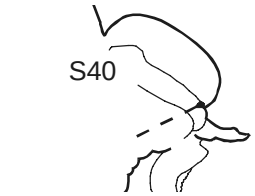



10. At no point is neuropodial presetal lobe longer than or equal to acicular lobe .....11
— At any point along its edge (at least above acicula) neuropodial presetal lobe equal to or longer than acicular lobe.....13

11. S1 without dorsal cirri; notopodial cirri in posteror segments as long as branchiae or longer, short geniculate chaetae in posterior noto- and neuropodial rows amongst long chaetae ..... .....***N. cirrosa*** form A
Low boreal and lusitanian, upper shelf.
— S1 with long dorsal cirri; geniculate chaetae absent.....12



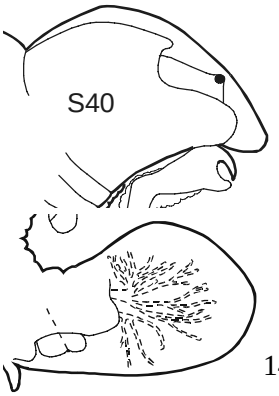

12. Ventral margin of neuropodial postsetal lobes of middle body (near S40) clearly S-shaped; branchiae start from S3 (rarely from S4 — usually in small worms); notopodial postchaetal lamellae of median and posteror chaetigers much shorter than neuropodial..... .....***Nephtys longosetosa***
Boreal and lusitanian, shelf.
— Ventral margin of neuropodial postsetal lobes of middle body (near S40) rounded; branchiae start from S4 or later; postchaetal lamellae well developed in notopodia and neuropodia.....***N. caeca***
Boreal and lusitanian, upper shelf.




13. Presetal notopodial lobes rudimentary and simple. Notopodial cirri in posteror segments as long as branchiae or longer, short geniculate chaetae in posterior noto- and neuropodial rows amongst long chaetae .. .....***Nephtys cirrosa*** form A

Low boreal and lusitanian, upper shelf.

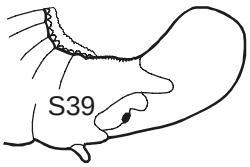
— Presetal notopodial lobes, at least in middle segments, well developed, more or less bilobed. Notopodial cirri in posteror segments usually much shorter than branchiae .....14

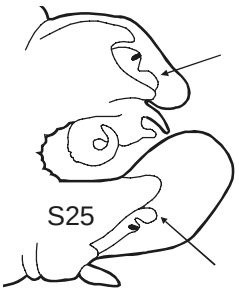



14. Postsetal neuropodial lobes with blood vessels .....***Nephtys assimilis***

Low boreal and lusitanian, upper shelf.

— Postsetal neuropodial lobes without blood vessels.....15

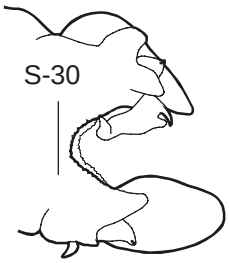


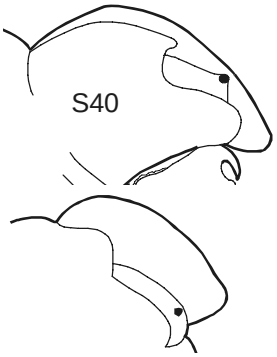

15. Postsetal neuropodial lobe several times longer than acicular lobe almost up to the pigidium; at least in some anterior segments (near S20), papillae below in notopodia (pointed) and/or above in neuropodia acicula (pointed), these papillae are large in worms 4 cm long, but in small worms are short and can be hardly visible.....***Nephtys hombergii***

Papillae can be differently developed in neighbouring segments, so it is nessesary to check several segments, preferabably with methyl blue stain. Often papillae are hardly visible in small worms and absent in worms smaller than 2 cm.

Low boreal and lusitanian, upper shelf.




— Postsetal neuropodial lobe in posterior segments only slightly, if at all, longer than acicular lobe; acicular lobes of anterior segments without papillae; ..16

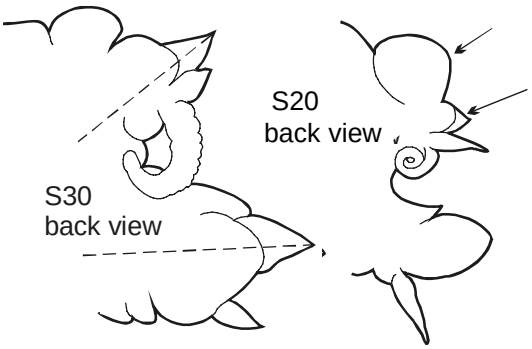



16. Postsetal notopodial lobes of middle segments (S30–S40) almost equal to acicular lobe; notopodial cirri in posterior chaetigers always several times shorter than branchiae .....***Nephtys kersivalensis***

Low boreal and lusitanian, upper shelf.

— Postsetal notopodial lobes of middle segments (S30–S40) distinctly longer than acicular lobe; notopodial cirri in posterior (in small worms only near pigidium) chaetigers at least as long as branchiae ..... .....***Nephtys cirrosa*** form B

17. Prostomium with antennae .....***Aglaophamus***...18
— Prostomium without antennae .....***Inermonephtys foretmontardoi***
Lusitanian.




18. Branchiae are from S9–S23 and until S21–S47, upper and lower part of notopodial postsetal lobes equal.....***Aglaophamus malmgreni***
Arcto-boreal lower shelf, slope and deeper.

— Branchiae from S2 to the end of body; upper part of notopodial postsetal lobes much bigger than lower part.....***Aglaophamus agilis***
= *A. rubellus*.
Low boreal and lusitanian, upper shelf.

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