

## Where did the parasitic sea spider *Nymphonella tapetis* come from and belong to?

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A sea spider, *Nymphonella tapetis*, is known to be a parasite for bivalves but has been very rare species globally. However, sudden outbreak of this species began in a narrow area of Tokyo Bay in 2007, subsequently occurred in remote areas of Mikawa Bay (Aichi Prefecture) in 2008 and in Matsukawaura (Fukushima Prefecture) in 2009, causing considerable damage for local Manila clam (*Ruditapes philippinarum*) fisheries. In order to compare these three local populations and to determine the origin and phylogenetic status, we analyzed partial nucleotide sequences of mtDNA COI and 16S rDNA genes and nuclear ribosomal DNAs (18S and ITS1). COI sequence was determined for a total of 110 individuals collected from these three localities. Average nucleotide sequence divergence between individuals was low ( $0.2 \pm 0.07\%$ ), and three local samples shared the most common haplotype with no significant difference in haplotype frequency between the samples. Since there has been little report on the occurrence of this species neither in these areas nor elsewhere in Japan, it is likely that these local populations share common source which may be recently derived with imported Manila clam for stocking. Phylogenetic reconstruction using COI, 16S rDNA and ITS1 was failed, as sequence divergence between sea spider species was very large. 18S rDNA data suggests that *N. tapetis* is a terminal clade within the genetically and morphologically diverse genus *Ascorhynchus*, which should probably be split into multiple genera.



Adult phase



Larval phase in the Manila clam