

***Idas* cf. *cylindricus* Pelorce & Poutiers, 2009 (Bivalvia: Mytilidae) in Icelandic waters**

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ABSTRACT. A cetacean vertebra was collected during a campaign of the Marine and Freshwater Research Institute (Reykjavik - Iceland) in southwest Iceland. It was colonised by five specimens of the genus *Idas* Jeffreys, 1876 which have strong similarities with the species described as *Idas cylindricus* Pelorce & Poutiers, 2009. Illustrations and discussions about the identification are presented here.

RESUME. Une vertèbre de cétacé a été récoltée lors d'une campagne du "Marine and Freshwater Research Institute (Reykjavik - Iceland)" au sud-ouest de l'Islande. Elle était colonisée par cinq spécimens du genre *Idas* Jeffreys, 1876 qui présentent de fortes similitudes avec l'espèce décrite comme *Idas cylindricus* Pelorce & Poutiers, 2009. Leur appartenance spécifique est ici discutée, illustrations des spécimens à l'appui.

INTRODUCTION

The genus *Idas* Jeffreys, 1876 and *Adipicola* Dautzenberg, 1927 are assigned to Mytilidae Rafinesque, 1815 in the sub-family Bathymodiolinae Kenk & B.R. Wilson, 1985. There are discussions if these two genera should be considered as two different ones or only one genus (Warén 1991) but it is not the purpose to discuss this topic here.

The species of the genus *Idas* are found in association with organic material such as sunken wood or cetacean remains like sunken bones or "whale" blubber on which they feed with the help of chemiosymbiotic bacteria. The specificity of their habitats makes them difficult to find. Warén (1991) reviewed the species of the genus *Idas* in the European waters with a discussion on the genus *Adipicola* and *Myrina* H. Adams & A. Adams, 1854. Five species were identified at that time in the Northeast Atlantic Ocean (Atl.) and in the Mediterranean Sea (Med.): *Idas argenteus* Jeffreys, 1876 (Atl.), *Idas ghisottii* Warén & Carozza, 1990 (Med.), *Idas modiolaeformis* (Sturany, 1896) (Med.), *Idas pelagica* (Forbes in Woodward, 1854) (Atl.) and *Idas simpsoni* (J.T. Marshall, 1900) (Atl. and Med.). Several new species were identified since then. Oliver & Holmes (2008) recognized in the North Atlantic *Idas argenteus* var. *lamellosus* Verrill, 1882 at the species level as *Idas lamellosus* Verrill, 1882. Pelorce & Poutiers (2009)

described the new *Idas cylindricus* on a whale bone from the Gulf of Lion (Sète, South of France in the Mediterranean Sea). Since this description, Nolf & Kreps (2011) mentioned it in the Bay of Biscay, South of La Rochelle (France) on a sunken dolphin bone in association with *I. simpsoni*. All the collected specimens at this locality were juveniles. More recently, Giusti et al. (2012) added four new *Idas* species in the Mediterranean Sea from Tyrrhenian organic deep-water bottom: *Idas cristiani* Giusti, Mietto & Sbrana, 2012, *Idas emmae* Giusti, Mietto & Sbrana, 2012, *Idas filippoi* Giusti, Mietto & Sbrana, 2012 and *Idas jaclinae* Giusti, Mietto & Sbrana, 2012. This leads to a total of eleven species of *Idas* sensu lato in the European waters (MolluscaBase 2019). Finally, Scaperrotta et al. (2016) provided illustrations of growth series of Mediterranean species, with the exception of *I. cylindricus* already figured by Pelorce & Poutiers (2009).

The identification of the species is complicated by the fact that juveniles and adults do not always have the same shape and that, for some species, the teeth in the hinge present in juveniles disappear in adults. The size range proposed for each species must be considered as an indication only. Indeed, it happens that specimens illustrated by an author are in conflict with the size range they propose (Nolf & Kreps 2011, Scaperrotta et al. 2016). Furthermore, the scarcity of available specimens, mainly because of the specificity

of their living environment, means also that the distribution range for each species should be taken with caution.

Abbreviations

MFRI: Marine and Fresh Water Research Institute, Reykjavik, Iceland;

MNHN: Muséum national d'Histoire naturelle, Paris, France.

Material

The Marine and Freshwater Research Institute in Reykjavik (Iceland) is conducting different campaigns in order to evaluate fish stocks each year. On May 19th 2014, a lumbar or anterior caudal vertebra of an Odontoceti was collected by Jónbjörn Pálsson at station D4-2014-53, net set at 63°27.56'N, 23°38.30'W at a depth of 188 meters; net hauled at 63°22.77'N, 23°42.15'W at a depth of 211 meters (southwest Iceland). The bone was kept in the deep freezer for a few months and analysed afterwards. The vertebra was about 9.5 cm long. It was colonised by five specimens of a Mytilidae of the genus *Idas*. When defrosted, three specimens were still in place (Fig. 1A), the two others had fallen off the vertebra. One of the specimens was fixed inside a foramen of the bone (Fig. 1B-C) and the others were attached on the bone by a small byssus of only a few threads (Fig. 1D-E).

All five specimens had more or less the same size (from 15.9 to 17.3 mm in length) and were adults. At first sight these specimens reveal a very inflated shell, a quite rectangular shape and a relatively big size for the genus.

COMPARATIVE ANALYSIS AND DISCUSSION

Compared to the five species present in the Northeast Atlantic so far, these Icelandic shells do not belong to *Idas pelagica* (Forbes in Woodward, 1854) today accepted as *Adipicola pelagica* (Forbes in Woodward, 1854), their umbos being situated very anteriorly, nor to *I. argenteus* and *I. lamellosus* due to their size and

shape. The big size of the Nordic shells is in accordance with *I. cylindricus* and *I. simpsoni*, two quite close species, but the rectangular shape (Fig. 1Fa-b, 1Ha-b) and the position of the umbos (Fig. 1Fc, 1G, 1Hc, 1I) make them closer to *I. cylindricus* (Fig. 1L) than to *Idas simpsoni*.

Compared to the four species recently described in the Tyrrhenian Sea (Giusti et al. 2012) and to the Mediterranean species *I. ghisottii*, the rectangular and cylindrical shape of the Icelandic specimens is completely different from the elongated form of the last described Mediterranean species. Moreover, unlike the latter, their periostracum is devoid of bristles. *Idas modiolaeformis* presents a short and thin ligamentous area while the one of *I. cylindricus* and Icelandic specimens is long and thick (Fig. 1Fa, 1Ha), even in young specimens as observed on individuals in our possession from the Gulf of Biscay (Fig. 1M). Furthermore, as far as known from the literature, the habitat of *I. modiolaeformis* appears to be limited to deep water organic bottoms in the Mediterranean (Scaperrotta et al. 2016, Warén 1991). Records on cetacean bones are up to now unknown for this species.

Compared to *I. cylindricus*, the umbos of the Icelandic specimens are well located in the anterior part of the shell and the hinge is also very large. Because their umbos are all worn out (Fig. 1Fb, 1Hb) and as a consequence the prodissoconchs are no longer visible, it is impossible to compare them with those of *I. cylindricus* at the source of the original description (Pelorce & Poutiers 2009). In adult specimens of *I. cylindricus* the length (L) / height (H) ratio is close to 2.20. It varies between 2.05 and 2.28 for the five Icelandic shells. Beyond 15-17 mm, the height of the valves of *I. cylindricus* is almost equal to their bulge, which gives to the larger specimens their distorted appearance exactly like in the Icelandic shell (Fig. 1F-I, 1K) although their ventral edge is a little bit more arched. Even in this case the dorsal and ventral edges of the shells remain almost parallel. As can be seen by comparing the profile of the holotype (Fig. 1N) with the one of paratype 3 and other paratypes represented

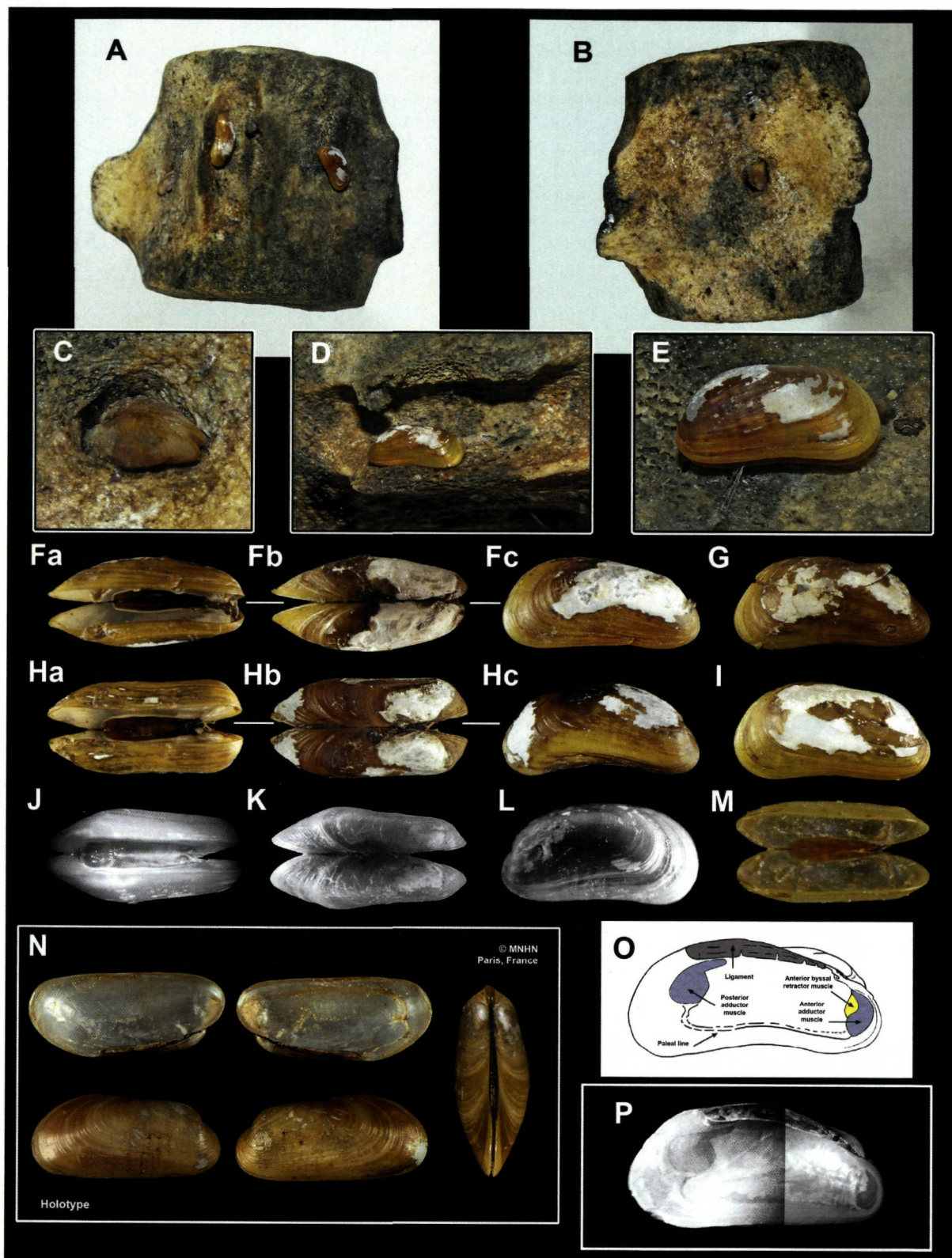
Figure 1

A-I. *Idas* cf. *cylindricus*, southwest Iceland, MFRI. A-B. Odontoceti vertebra of 9.5 cm long with the three *Idas* *in situ*. C. Specimen 5 into the foramen of the bone. D-E. Specimens 1 and 4 fixed by their byssus on the surface of the bone. Fa-c. Specimen 1: 17.3 mm x 7.6 mm. G. Specimen 2: 17.3 x 8.2 mm. Ha-c. Specimen 3: 15.9 x 7.4 mm. I. Specimen 4: righth valve, 16.2 x 7.9 mm.

J-N. *Idas cylindricus*. J. Paratype 13 in Pelorce & Poutiers 2009, 23.0 x 10.3 mm. K. Paratype 2 in Pelorce & Poutiers 2009, 17.2 x 8.1 mm. L. Paratype 3 in Pelorce & Poutiers 2009, 12.3 x 6.7 mm. M. Off south La Rochelle - Bay of Biscay, France, 180 m on dolphin bone, 4.3 x 2.0 mm. N. Holotype MNHN-IM-2000-20793, off Sète, Mediterranean Sea, Gulf of Lion, Hérault, France, 42°-43°N, 03°-04°E, 15.6 x 6.4 mm.

O. *Idas* cf. *cylindricus*, drawing of the internal face of the left valve, specimen 4, 16.2 x 7.9 mm.

P. *Idas cylindricus*, internal face of paratype 11 in Pelorce & Poutiers 2009, 15.0 x 7.0 mm.



in Pelorce & Poutiers (2009: 982, fig. 3) all of them have a different shape. Moreover, the holotype is not particularly the most representative specimen of the series. The internal surface of the left valve of an Icelandic specimen is represented by a drawing in Fig. 1O. The anterior adductor muscle scar (AAS) forming $\frac{3}{4}$ of a circle is large and goes far into the anterior part of the shell (Fig. 1O). The umbos are positioned slightly at the edge of the AAS, whereas it should be located at the vertical of its middle part as specified in the description of *I. cylindricus*. Considering the case of *I. simpsoni* in which the umbos are far distant from the AAS (Pelorce & Poutiers 2009), this element excludes the Icelandic specimens from belonging to this latter species. The most striking comparative feature is the very strong and large brown internal ligament which occupies more than half of the shell (Fig. 1Fa, 1Ha, 1J, 1M, 1O). The byssus is very weak, made of a few threads (Fig. 1E), a characteristic which is in accordance with the description of that of *I. cylindricus*.

CONCLUSIONS

The very long and large brown internal ligament, the large hinge, the rectangular form of the shells, the deformed valves when bigger than 15 mm, the absence of bristles on the periostracum, the weak byssus, the ratio L/H close to 2.20, are all features well in accordance with *Idas cylindricus*. The position of the umbos in relation to the AAS being not fully in accordance with the holotype/paratypes of *I. cylindricus* leads us to a determination as *Idas* cf. *cylindricus*. The availability of more specimens with undamaged umbos and showing a wider variation range in size, shape and age would have brought more arguments for attributing these specimens to *I. cylindricus* or to another not yet described species. Since 2014, despite five years of dredging campaigns, no new *Idas* showed up in Icelandic waters, these molluscs were only found once. In the absence of such elements it is more reasonable, for the moment, to stick to *Idas* cf. *cylindricus* than to attempt to describe a new species.

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REFERENCES

- Giusti, F., Mietto, P. & Sbrana, C. 2012. Il genere *Idas* in Mediterraneo con la descrizione di quattro nuove specie. *Bollettino Malacologico*, 48(2): 122-135.
- MolluscaBase 2019. <http://www.molluscabase.org>. Accessed through World Register of Marine Species on 2019-04-15.
- Nolf, F. & Kreps, J.P. 2011. Comparison of some interesting molluscs trawled by the Belgian fishery in the Bay of Biscay and with similar representatives from adjacent waters - Part IV. *Neptunea*, 10(1): 1-32.
- Oliver, P.G. & Holmes, A.M. 2008. *Idas lamellosus*, a woodfall mussel new to the fauna of Northeast Atlantic. *Journal of Conchology*, 39(6): 705-708.
- Pelorce, J. & Poutiers, J.M. 2009. Une nouvelle espèce de Bathymodiolinae associée à des os de baleine coulés en Méditerranée. *Zoosystema*, 31(4): 975-985.
- Scapperotta, M., Bartolini, S. & Bogi, C. 2016. *Accrescimenti - Stadi di accrescimento dei molluschi marini del Mediterraneo. Vol VIII*. L'Informatore Piceno, Ancona, Italia: 208 p.
- Warén, A. 1991. New and little known molluscs from Iceland and Scandinavia. *Sarsia*, 76: 73-124.