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Dr Claude Massin (25/08/1948—04/09/2021), in Memoriam

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Abstract

This contribution provides an overview of the scientific career of the late Dr Claude Massin (1948–2021), listing his scientific activities (academic career, participation to and organization of expeditions and scientific conferences, publications) as well as the taxa he described as new to science and the eponyms that were dedicated to him. The scientific career of Claude Massin is briefly sketched against the background of the personal family-life.

Key words: Necrology, taxonomy, Holothuroidea, coral boring gastropods, North Sea fauna, collection management, museology

Introduction

Here we bring into memory the rich life of biologist Dr Claude Massin (1948–2021), dedicated husband, father, grandfather, gentleman, true and generous friend, respected and meticulous scientist in different biological fields. Disciplines such as holothuroid taxonomy (Echinodermata: Holothuroidea), comparative anatomy and ultrastructure of the feeding apparatus of holothuroids, commensalism by gastropods on fungiid corals, faunistics of Zealand (the Netherlands) and several Belgian stone quarries, scientific diving, accurate collection management, sound museology based on collections and the establishment of citizen science *avant-la-lettre* for lovers of all living aquatic organisms.

Dr Claude Massin was the only son of the Belgian industrial Albert, François, Maurice Massin (22/11/1914–07/07/1993) and his wife, the German Théa Scheidsweiler (30/11/1917–30/03/2002). Claude saw light in Luxemburg, the Grand Duchy of Luxembourg, on 25/08/1948. Claude had a single, one-year older sister, Jacqueline Massin, also born in the Grand Duchy of Luxemburg (28/08/1947). He had the Belgian nationality and was married (on 18/04/1973) to the Belgian Anita Maes, who was born on 15/10/1948 in Jadotville, then the Belgian Congo. Together they raised two children, Frédéric (01/02/1975 in Etterbeek, Belgium) and Florence Massin (17/10/1977 in Etterbeek, Belgium). On 21/09/2016, their family was enriched with a grandchild, a boy called Raphaël Massin, sun of Frédéric Massin & Anne Delaive.

Claude's family was for two generations into the rubber business, whereby his father led a Belgium-based factory employing some 40 employees. Claude's professional career seemed written in stone as successor of his father's business, but his budding passion for natural history and especially that of the living aquatic world changed the course of his professional career. The Massin family rubber factory was sold in the nineteen seventies. Claude had the maximum opportunity to spread his wings, wings that would turn out to be fins.

Claude's career path was already somewhat visible at the end of his elementary school (called 'Singelijn' in Woluwe-Saint-Pierre, a municipality located in the Brussels-Capital Region of Belgium) when in 1956 his teacher noted that Claude had a remarkable talent for drawing. In a communication to the Massin family, she drew attention to Claude's exceptional drawing abilities. He could accurately picture a sailboat, ducks, peacocks, hens and roosters, pigeons, tits, flies, fish in seaweed, jellyfish, shells, the head of a horse and so on. Claude's interest in observing and documenting natural history only continued to grow thanks to the fact that his parents were members of a sailing club at Hofstade, a village in the municipality of Zemst, in Flemish Brabant. Here Claude could wander around the

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shores of the lake looking at fauna and flora while his parents were gone sailing. During one of his 'explorations', at the age of nine, disaster nearly happened when he fell from a bridge in the water and, while not being able to swim yet, nearly drowned. Luckily, he was accompanied by a friend who rescued him with a buoy. As a result, Claude's father enrolled him in the swimming school of the municipality of Etterbeek in Brussels.

Only a few years later Claude's father, who was acquainted with divers at the Hofstade lake, decided to take Claude's nautical education a step further and enrolled him, at the age of 11 or 12, in the local diving club so that Claude could observe under water, *in situ*. To these trainings he went alone by tram carrying his equipment himself, including his heavy submarine diving bottle (Figure 1). Claude pursued his diving training in Anderlecht, a municipality of Brussels.

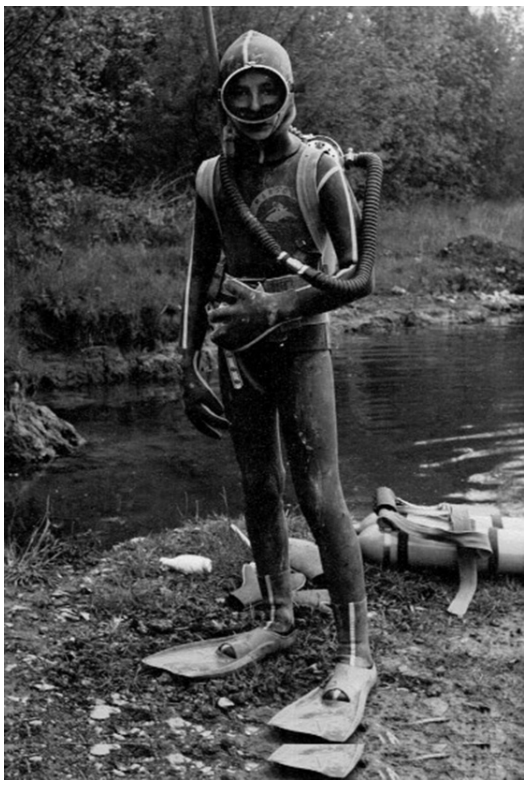

FIGURE 1. 27 March 1962. Claude Massin, as a 13-year-old boy ready to go SCUBA-diving (courtesy of EPSM, https://epsm.be).

With his gained water-skills Claude could enjoy the summer holidays with his family even more, especially as these now took place in the South of France, at the French Riviera where his parents had a sailboat. Claude used and enjoyed the annual three-weeks of holiday to explore the coast by handpicking at low tide and by snorkeling nearly *ad libitum* along the rocky shores.

Things improved even more from 1962 onwards when the family Massin shifted their favorite holiday destination to Palma de Mallorca in the western Mediterranean where they had bought a holiday home in the city of Cala Murada. The crystal-clear waters around the coast of Cala Murada were the best present young Claude could receive to discover even more marine flora and especially fauna, snorkeling and collecting around Palma.

It was fate that the parents of Mrs Anita Maes had also bought a house at Cala-Murada where four members of the family resided after the retirement of the senior Mr. Maes from his duties in the ex-Belgian Congo. It was in July 1967 when Claude met Anita Maes in Cala-Murada. At that time, Anita studied and worked in Brussels but would, on 18 April 1973, become Claude's spouse.

In Belgium the Massin-Maes family quickly build their own house in Overijse, a municipality south of Brussels. Very resourceful, Claude decided to personally carry out many finishing jobs on the house, working long hours after the call-of duty of his professional work. Unfortunately, during one such job, Claude fell from a height of several meters while standing on a tall ladder, badly injuring his spinal column. He would never fully recover from this injury, but it would not prevent him from pursuing his favourite SCUBA-diving activities, up to the moment when his back prevented him to carry out further efficient and safe diving. But before that turning-point he was one of the most active members of his diving club EPSM (Ecole de Plongée Sous-Marine) in Anderlecht, member of

LIFRAS (Ligue Francophone de Recherches et d'Activités Sous-Marines). He was particularly active in the scientific commission of LIFRAS, training divers in scientific techniques, organizing seminars and field trips for divers and non-divers alike to discover the richness of the marine world, documenting in detail the richness of the marine fauna and flora of Zealand, the Netherlands, as well as that of several stone quarries in Belgium (cf. his publication record below).

Dr Claude Massin obtained his master's degree in zoology on 28/09/1972, at the *Université Libre de Bruxelles* (ULB, Free University of Brussels) under the direction of Professor Jean Bouillon (1926–2009) who was a Belgian marine biologist with an exceptional taxonomic knowledge on Hydrozoa. In 1975, they published a joint paper on cnidogenesis (Bouillon & Massin 1975); it was Claude's first publication in an international journal. In 1978, again under the direction of Prof. Jean Bouillon, Claude successfully defended his PhD entitled "Etude de la nutrition chez les holothuries aspidochirotes (Echinodermes): comportement alimentaire, structure et fonction de l'appareil digestif", an extremely well-illustrated, 204 pages long, impressive work. This study, basically on the functional anatomy of the feeding apparatus of sea cucumbers (Echinodermata: Holothuroidea), was made possible thanks to the scientific support of Dr Michel Jangoux, also from the ULB, and to the financial support of the Fonds national de la Recherche scientifique (https://www.frs-fnrs.be). This PhD put Claude Massin firmly on the map of holothuroid research. It allowed him to publish several more papers that he could extract from his PhD (see list of publications below) and enabled him to get into scientific contact with colleagues internationally. It led him to obtain a postdoctoral position at the *Centre National pour l'Exploitation des Océans* (https://wwz.ifremer.fr/archives) in Brest (France), financed by NATO, where bathyal and abyssal holothuroids became his study objects.

FIGURE 2. December 1971. Break during the parasitology course of Prof. Raymond Van Breusseghem (ULB); Claude Massin in the front of the picture, with book (courtesy of Dr George Lenglet).

After his postdoctoral position in Brest, Claude Massin sought a more permanent appointment. He found it at the Royal Belgian Institute of Natural Sciences in Brussels, Belgium (RBINS) where, from 1980 to 1982 he was appointed temporary assistant under the direction of head of Department Dr Jackie Van Goethem. His job was to, amongst other, curate the then rather chaotically arranged bivalve collection of the RBINS. While carrying out this job, which he did with *bravoure* and to the satisfaction of his colleagues, Claude was appointed as assistant at the RBINS. As soon as in 1984, he was upgraded to first assistant, a grade that four years later he again saw scaled-up to *chef de travaux* (senior research scientist). This title he would keep until his retirement in 2008, being in charge

of the Malacology Section when Jackie Van Goethem was on scientific or diplomatic mission or on holidays. After his retirement Claude would remain scientific collaborator of the RBINS until mid 2018.

Next to the curation of the bivalves collection, Claude also received other tasks at the RBINS, tasks that were as diverse as they were daunting. For instance, Claude was asked to mend to a good end the renovation of most of the permanent exhibition of the museum dedicated to marine invertebrates. Claude was also the scientific authority when it came to expertise on corals in general, an expertise that made him Belgium's representative for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, https://cites.org) on that taxon. Claude was especially renowned for his exceptional taxonomic expertise across different zoological groups. He excelled in three taxa: Fungiidae Dana, also known as mushroom or plate corals; gastropods of the genera *Leptoconchus* Rüppel and *Magilus* Montfort, commensals with corals, and his beloved taxon: Holothuroidea or sea cucumbers. In all three groups Claude's knowledge was outstanding, but above all, his scientific contributions to our knowledge of sea cucumbers was overwhelming as can be witnessed in his list of expeditions, his participations to conferences, and his scientific publications dealing with this group of echinoderms (see list below).

During his long career, Claude undertook no less then 55 international expeditions and visits to institutions. Some only several days long (e.g., visits to sister natural history institutions such as the *Musée national d'Histoire naturelle de Paris* or the *Zoologisch Museum und Institut of Hamburg* in Hamburg) to study reference collections, especially type specimens from which he would take tissue samples to prepare ossicles back in the RBINS. Some were several weeks longue (e.g., his stays at the biological station of Roscoff to study the marine habitats and their communities). Others lasting months (e.g., his eight exploration campaigns to Laing Island, Papua New Guinea to sample holothuroids, fungiids − with their commensals − as well as other marine organisms, his exploration to Rapa Nui to sample holothuroids, with fellow expedition members sampling for instance sponges and copepods in the ocean, and spiders on land). In the fall of his career, excursions to far-off locations became rarer (e.g., the expedition to Madagascar and La Réunion in 2000 and to the Comoros in 2004) and were replaced by numerous collecting trips to the Belgian Coastal Zone in order to better understand the biodiversity thriving in and on the many shipwrecks and with trips to many European institutions (e.g., the Zoological Museum at Moscow University) to document the types of the commercial sea cucumber families Holothuriidae Burmeister and Stichopodidae Haeckel. This was part of a US NSF PEET project on these two families in which the Belgian party, composed of Dr Yves Samyn, Dr Didier VandenSpiegel and Dr Claude Massin, were committed to documenting as much as possible the types of these two families present in European Museums.

All these explorations brought home important research collections (including some 10.000 microscopic preparations with ossicles from various tissues from different species of sea cucumbers, in many cases from type specimens), but also spectacular pieces that fed RBINS' expositions. Hereunder, Claude Massin's main explorations are listed in chronological order.

Roscoff (Finistère Nord, France): several one-week stays in the biological station of Roscoff (between 1971 and 1976)—**Napoli** (Italia): one month (15/07/1972 to 15/08/1972) at the *Stazzione Zoologica di Napoli*—**Tamaris** (Var, France): two months (06 & 07/1974) at the Station of Marine Physiology of Tamaris—**Villefranche-sur-Mer** (Alpes Maritimes, France): one month in 1976 and one month in 1977 at the *Station Zoologique de Villefranche*—**Walvis**: participation to the international oceanographic expedition "Walvis" in the south Atlantic Ocean (18/12/1978 to 18/01/1979) aboard the oceanographic vessel *Jean Charcot*—**Biogas 8:** participation to the oceanographic expedition "Biogas 8" in the North Atlantic Ocean (29/05/1979 to 08/06/1979) aboard the oceanographic vessel *Noroit*—**Biogas 9**: participation to the oceanographic expedition "Biogas 9" in the North Atlantic Ocean (09/05/1980 to 23/05/1980) aboard the oceanographic vessel *Capricorne*—**Laing Island (**Papua New Guinea): two months and a half (23/09/1983 to 07/12/1983) at the King Leopold III Biological Station—**Maldives**: one month (15/11/1984 to 15/12/1984) collecting zoological samples in North and South Male Atoll—**Laing Island** (Papua New Guinea): two months (02/09/1985 to 01/11/1985) at the King Leopold III Biological Station—**Leiden** (The Netherlands): three days (09/06/1986 to 11/06/1986) at the *Rijksmuseum van Natuurlijke Historie* (= Naturalis)—**Paris** (France): two stays of one day at the *Muséum national d'Histoire naturelle de Paris* (22/06/1987 and 08/09/1987)—**Laing Island** (Papua New Guinea): one month and a half (16/09/1987 to 20/10/1987) at the King Leopold III Biological Station—**Motupore Island** (Papua New Guinea): two weeks (21/10/1987 to 06/11/1987) at the Motupore Island Research Department (University of Papua New Guinea)—**Laing Island** (Papua New Guinea): one month and a half (16/08/1988 to 28/09/1988) at the King Leopold III Biological Station—**Madang** (Papua New Guinea): three weeks (10/09/1989 to 31/09/1989) at the Christensen Research Institute—**Laing Island** (Papua New

Guinea): four weeks (01/10/1989 to 01/11/1989) at the King Leopold III Biological Station—**Paris** (France): three days (03/04/1990 to 05/04/1990) at the *Muséum national d'Histoire naturelle de Paris*—**Singapore**: one week (18/08/1990 to 25/08/1990) at the University of Singapore—**Madang** (Papua New Guinea): four weeks (26/08/1990 to 23/09/1990) at the Christensen Research Institute—**Laing Island** (Papua New Guinea): three weeks (24/09/1990 to 10/10/1990) at the King Leopold III Biological Station—**Paris** (France): two days (22 and 23/04/1991) at the *Muséum national d'Histoire naturelle de Paris*—**Hamburg** (Germany): three days (20/05/1991 to 22/05/1991) at the *Zoologisch Museum und Institut Hamburg*—**Hurghada** (Egypt): two weeks (14/11/1991 to 29/11/1991) at Hurghada Ecological observations—**Leiden** (The Netherlands): three days (24/02/1992 to 26/02/1992) at the *Nationaal Natuurhistorisch Museum* (= Naturalis)—**Paris** (France): three days (12/10/1992 to 14/10/ 1992) at the *Muséum national d'Histoire naturelle de Paris*—**Leiden** (The Netherlands): one day (06/05/1993) at the *Nationaal Natuurhistorisch Museum* (= Naturalis)—**Easter Island** (Chili): one month (27/11/93 to 25/12/93) at Easter Island as Chief Scientist of the *D.I.S. Rapa Nui 270 Expedition*—**Ujung Pandang** (Indonesia): two months (19/08/94 to 13/10/94) on the Spermonde Archipelago with lecture at the Hasanuddin University—**Paris** (France): three days (21/11/94 to 23/11/94) at the *Muséum national d'Histoire naturelle de Paris*—**Madang** (Papua New Guinea): one month (11/09/1996 to 10/10/1996) at the Chistensen Research Institute—**Laing Island** (Papua New Guinea): three weeks (10/10/1996 to 31/10/1996) at the King Leopold III Biological Station—**University Sains Malaysia** (Malyasia, Pulau Penang): five weeks (02/09/98 to 07/10/98) in the Johor Marine Park and Pulau Lankawi Archipelago—**Tuléar** (Madagascar): three weeks (1/03/2000 to 21/03/2000) at the *Institut Halieutique des Sciences de la Mer*—**La Réunion** (France): ten days (22/03/2000 to 3/04/2000) at the *Université de la Réunio*n—**R.V. *Belgica*:** three days (10 to 12/07/2000), participation to the sampling of shipwrecks in the Belgian Coastal zone from the R.V. *Belgica*—**R.V. *Belgica***: four days (9 to 12/07/2001), participation to the sampling of shipwrecks in the Belgian Coastal zone on the R.V. *Belgica*—**R.V. *Belgica*:** four days (1 to 4/07/2002), participation to the sampling of shipwrecks in the Belgian Coastal zone on the R.V. *Belgica*—**R.V. *Belgica***: three days (21 to 23/10/2003), participation to the sampling of shipwrecks in the Belgian Coastal zone from the R.V. *Belgica*—**D.V. *Stream***: one day (18/03/2003), participation to the sampling of the shipwrecks *Bourrasque* and *Kilmore* in the Belgian Coastal Zone from the D.V. *Stream*—**D.V. *Stream***: one day (12/06/2003), participation to the sampling of the shipwreck *Kilmore* in the Belgian Coastal Zone from the D.V. *Stream*—**D.V. *Stream***: one day (10/09/2003) in an attempt to sample from the D.V. *Stream* (failed due to bad weather conditions)—**R.V. *Belgica***: three days (20 to 23/10/2003), participation to the sampling of the shipwreck *Birkenfels* in the Belgian Coastal Zone from the R.V. *Belgica*—**D.V. *Blue Thistle*:** one day (02/04/2004), participation to the sampling of the shipwreck *Kilmore* from the D.V. *Blue Thistle*—**D.V. *Stream*:** one day (27/05/2004), participation to the sampling of the shipwrecks *Callisto* and *Bourrasque* from the D.V. *Stream*—**R.V. *Belgica***: five days (13 to 17/09/2004) participation to the sampling on a gravel zone and on the shipwreck *Birkenfels* from the R.V. *Belgica*—**Grande Comore** (Comores): two weeks (06 to 20/10/2004) sampling echinoderms and estimating the size of the holothuroid population—**Paris** (France): one week (06 to 10/03/2006) at the *Musée national d'Histoire naturelle de Paris*—**London** (U.K): one week (24 to 28/04/2006) at the Natural History Museum—**Berlin** (Germany): one week (07 to11/05/2007) at the *Museum für Naturkunde*—**Moscow** (Russia): one week (11 to 15/06/2007) at the Zoological Museum of Moscow University—**Hamburg** (Germany): one week (18 to 22/02/2008) at the *Zoologisches Museum Universität Hamburg*—**Göttingen** (Germany): one week (06 to 11/09/2009) at the *Zoologisches Museum Universität Göttingen*—**Amsterdam** (the Netherlands): one week (11 to 13/10/09) at the *Zoologisch Museum Amsterdam* (collection now transferred completely to the Naturalis).

Claude Massin also participated to several national and international conferences, as well as meeting groups such as those of the Belgian CITES scientific committee. During these occasions he spread his knowledge either through oral presentations or through poster presentations which he always presented in person. But his presence at these symposia was perhaps even more important in his network-building than in his spreading (and acquiring) of knowledge. To give just one concrete example, during the eighth International Echinoderm Conference in Dijon, France (1993), Claude met Dr Alexey Smirnov from the Zoological Institute of the Russian Academy of Sciences. Alexey trusted to Claude that part of C.G. Semper's important holothuroid collection (Semper 1868), which was considered lost, had been deposited in the collection of the Zoological Museum of the Moscow State University (for details, see Samyn *et al.* 2013).

Below, the national and international symposia that Claude attended to are listed in chronological order. It will strike the reader that they can roughly be divided in four kinds: (i) those on echinoderm biology *s.l.*, (ii) those on coral reefs *s.l.*, (iii) those on malacology, and (iv) those on biodiversity in general, especially on the fauna living on in and around the shipwrecks of the North Sea.

FIGURE 3. October 2004. Dr Claude Massin coming back from a successful dive in the waters of Grande Comore, the Comores; Dr Yves Samyn on the front right side of the boat served as his dive buddy (see also Samyn *et al*. 2005; 2006 a, b). (courtesy of Dr Didier VandenSpiegel).

Brussels, Belgium (03 to 08/09/1979): one oral and two poster communications at the *European Colloquium on Echinoderms*—**Paris, France** (18 to19/09/1980): one oral communication at *Table ronde sur les échinodermes*—**Townsville, Australia** (08 to 12/08/1988): one oral communication at the *6th International Coral Reef Symposium*—**Brussels, Belgium** (25 to 26/11/1988): one poster presentation (being also acting secretary) at the *Symposium on Invertebrates of Belgium*—**Tübingen, Germany** (27/08 to 02/09/1989: two poster presentations at the *10th International Malacological Congress*—**Bremerhaven, Germany** (23 to 27/05/1991): participation at the *EPOS 3 Symposium*—**Sienna, Italy** (30/08 to 06/09/1992): one poster presentation at the *11th International Malacological Congress*—**Dijon, Paris** (05 to 11/09/1993): one poster presentation at the 8th International Echinoderm Conference—**Brussels, Belgium** (14/12/2001): one poster presentation at the symposium *Faune belge: état des lieux et tendances observées, avec une attention particulière pour les espèces exotiques*: one poster presentation—**Brussels, Belgium** (21 to 22/01/2001): participation to the conference *Gestion durable de la mer du Nord 1997-2001*—**Brussels, Belgium** (02/10/2002): one oral presentation at the *Workshop on the multibeam echosounder Kongsberger Simrad Em 1002 installation on board of the RV Belgica*—**Brussels, Belgium** (04 to 08/12/2006): two oral presentations on *PEET workshop on Aspidochirotida taxonomy*—**Brussels, Belgium** (20 to 24/2012): one poster presentation at the 14th Echinoderm Conference.

Given all the activities that Dr. Massin was involved in, reporting was the logical next step. Claude did this in his typical meticulous way. For instance, for taxonomic purposes, he made it a matter of honor to check each new issue of the *Zoological Record*, the world's leading taxonomic reference, as soon as the latest issue was available in the library of the RBINS. This rigorous approach made that the RBINS now is rich in perhaps one of the most complete reprint libraries (3000 + references) on sea cucumber taxonomy, completed until approximately 2016 (hereafter, new publications are stored solely as pdfs).

With the built-up collections (including ossicles from types curated in sister museums) and specialized libraries of sea cucumber taxonomy, gastropods commensal with fungiid corals and fungiid taxonomy, Claude was able to publish dozens of taxonomic papers. Coupled to work published on his research on the fauna of the shipwrecks of the Belgian Coast of the North Sea, Claude arrived at 106 publications during his lifetime. These are listed below in chronological order.

Massin, C. (1972) Contribution à l'étude de la cnidogenèse chez *Craspedacusta sowerbii* Lank., limnopolype. *Mémoire de licence*. Université Libre de Bruxelles, Brussels, 66 pp., 57 figs.

Bouillon, J. & Massin, C. (1974) La cnidogenèse. *Annales de la Société Royale Zoologique de Belgique*, 104, 7–38.

Jangoux, M., Massin, C. & Van Impe, E. (1975) Mise en évidence du rôle émonctoire des caecums rectaux *d'Asterias rubens* (Echinodermata, Asteroidea). *Comptes rendus de l'Académie des Sciences*, 281, 646–648.

Massin, C. & Jangoux, M. (1976) Observations écologiques sur *Holothuria tubulosa*, *H. poli* et *H. forskali* (Echinodermata, Holothuroidea) et comportement alimentaire de *H. tubulosa*. *Cahiers de Biologie Marine*, 18, 45–59.

Massin, C. (1978) Etude de la nutrition chez les holothuries aspidochirotes (Echinodermes): comportement alimentaire, structure et fonction de l'appareil digestif. *Thèse de Doctorat*, Université Libre de Bruxelles, Brussels, 204 pp.

Massin, C., Sibuet, M. & Jangoux, M. (1978) Description d'*Ixoreis psychropotae* nov. gen., nov. spec., coccidie parasite du tube digestif de l'holothurie abyssale *Psychropotes longicauda* Théel. *Protistologica*, 14 (3), 253–259.

Massin, C. (1980) The sediment ingested by *Holothuria tubulosa* Gmel. (Echinodermata, Holothuroidea). *In*: Jangoux, M. (Ed.), *Echinoderms Present and Past.* Balkema, Rotterdam, pp. 205–208. https://doi.org/10.1201/9781003078913-39

Massin, C., Bouland, C. & Bricourt, E. (1980) The buccal tentacles of *Holothuria forskali* D. Chiaje (Echinodermata, Holothuroidea). *In*: Jangoux, M. (Ed.), *Echinoderms Present and Past.* Balkema, Rotterdam, pp. 259. https://doi.org/10.1201/9781003078913-49

Massin, C. (1980) Morphologie fonctionnelle du tube digestif d'*Holothuria tubulosa* Gmel. (Echinodermata, Holothuroidea). *In*: Jangoux, M. (Ed.), *Echinoderms Present and Past*. Balkema, Rotterdam, pp. 261–270. https://doi.org/10.1201/9781003078913-50

Massin, C. (1982) Contribution to the knowledge of two boring gastropods with an annotated list of the genera *Magilus* Montfort, 1810 and *Leptoconchus* Rüppell, 1835. *Bulletin de l'Institut royal des Sciences naturelles de Belgique: Biologie*, 53 (17), 1–28.

Massin, C. (1982) Food and feeding mechanism: Holothuroidea. *In*: Jangoux, M. & Lawrence, J. (Eds.), *Echinoderm's nutrition*. Balkema, Rotterdam, pp. 42–55.

Féral, J.P. & Massin, C. (1982) Structure and function of the digestive organs: Holothuroidea. *In*: Jangoux, M. & Lawrence, J. (Eds.), *Echinoderm's nutrition*. Balkema, Rotterdam, pp. 191–212. https://doi.org/10.1201/9781003078920-11

Massin, C. (1982) Environmental effect of feeding activity: Holothuroidea. *In*: Jangoux, M. & Lawrence, J. (Eds.), *Echinoderm's nutrition*. Balkema, Rotterdam, pp. 493–497. https://doi.org/10.1201/9781003078920-28

Bouland, C., Massin, C. & Jangoux, M. (1982) The buccal tentacles of *Holothuria forskali* D. Chiaje (Echinodermata, Holothuroidea). *Zoomorphologie*, 101, 133–149. https://doi.org/10.1007/BF00312019

Bouillon, J, Massin, C. & Van Goethem, J. (1983) *Fungiacava eilatensis* Soot-Ryen, 1969 (Bivalvia, Mytilidae) et *Leptoconchus striatus* Rüppell, 1835 (Gastropoda, Coralliophilidae) mollusques perforant des Fungia (Anthozoa, Fungiidae) récoltés en Papouasie Nouvelle-Guinée. *Bulletin des Séances, Académie Royale des Sciences d'Outre-mer*, 4, 549–570.

Massin, C. & Sibuet, M. (1983) Découverte dans le bassin profond du Cap de l'espèce antarctique *Psychropotes scotiae* (Vaney, 1908) (Echinodermata, Holothuroidea). *Bulletin du Muséum national d'histoire naturelle*, 4ème Série, 5, Section A, 11, 169–174.

Massin, C. (1983) Note on the genus *Leptoconchus* Rüppell, 1835 (Mollusca, Gastropoda, Coralliophilidae) with the description of two new species, *Leptoconchus vangoethemi* sp. n. and *Leptoconchus cyphastreae* sp. n. from

Papua New Guinea. *Bulletin de l'Institut royal des Sciences naturelles de Belgique: Biologie*, 55, 1–16, 5 pls.
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The last contribution (2021) was published posthumously, just days after Claude's passing away. Likely more work on sea cucumbers as well as on coral-boring gastropods will still appear.

The screening of Dr Claude Massin's publications appeared so far reveal that in 26 out of his 106 papers three genera and 42 species have been formerly described as new to science. Of these 45 taxa, only five were not sea cucumbers or Holothuroidea. Hereunder we list these taxa by phylum and then chronology of appearance in the scientific literature.

***Chromophyte algae (phylum CHROMISTA)*:** *Ixoreis* Massin, Jangoux & Sibuet, 1978; *Ixoreis psychropotae* Massin, Jangoux & Sibuet, 1978.

***Molluscs (phylum MOLLUSCA)*:** *Leptoconchus vangoethemi* Massin, 1983; *Leptoconchus cyphastreae* Massin, 1983; *Reliquiaecava* Massin, 1987; *Magilus sowerbyi* Massin, 1982.

***Echinoderms (phylum ECHINODERMATA)*:** *Duasmodactyla turriculiacava* Massin, 1987*; Cucumella indonesiae* Massin, 1987 ; Massin, 1987; *Psolus solidus* Massin, 1987*; Holothuria (Acanthotrapeza) tripilata* Massin, 1987*; Holothuria (Metriatyla) horrida* Massin, 1987*; Allopatides corrugatus* Massin, 1987*; Bathyherpystikes baculosus* Massin, 1987*; Paroriza verrucosa* Massin, 1987*; Laetmogone parvipedata* Massin, 1987; *Thelenota rubralineata* Massin & Lane, 1991; *Mesothuria edwardensis* Massin, 1992; *Paradota marionensis* Massin, 1992; *Echinopsolus parvipes* Masssin, 1992; *Cucumaria acuta* Massin, 1992; *Trachythyone maxima* Massin, 1992; *Ekmanothyone* nom nov. Massin, 1993; *Paracucumaria deridderae* Massin, 1993; *Holothuria (Lessonothuria) cavans* Massin & Tomascik, 1996; *Synaptula spinifera* Massin & Tomasick, 1996; *Afrocucumis stracki* Massin, 1996; *Chiridota smirnovni* Massin, 1996; *Stichopus quadrifasciatus* Massin, 1996; *Bohadschia atra* Massin, Rasolofonirina, Conand & Samyn, 1999; *Holothuria (Mertensiothuria) arenacava* Samyn, Massin & Muthiga, 2001; *Stichopus ocellatus* Massin, Zulfigar, Tan Shaw Hwai & Rizal Boss, 2002; *Stichopus rubermaculosus* Massin, Zulfigar, Tan Shaw Hwai & Rizal Boss, 2002; *Labidodemas pseudosemperianum* Massin, Samyn & Thandar, 2004; *Labidodemas quadripartitum* Massin, Samyn & Thandar, 2004; *Labidodemas spineum* Massin, Samyn & Thandar, 2004; *Taeniogyrus magnibacilus* Massin & Heterier, 2004; *Actinopyga caerulea* Samyn, Massin & VandenSpiegel, 2006; *Actinopyga capillata* Rowe & Massin, 2006; *Holothuria lessoni* Massin, Uthicke, Purcell, Rowe & Samyn, 2009; *Echinopsolus excretiospinosus* Massin, 2010; *Synallactes virgulasolida* Massin & Hendrickx, 2010; *Mitsukuriella unusordo* Massin & Hendsrickx, 2011; *Ypsilocucumis californiae* Massin & Hendrickx, 2011 ; *Holothuria* (*Semperothuria*) *parvispinea* Massin, 2003; *Psolus rufus* Fernandéz-Rodriguéz, Arias, Borrell, Anadon, Massin & Acuna, 2017.

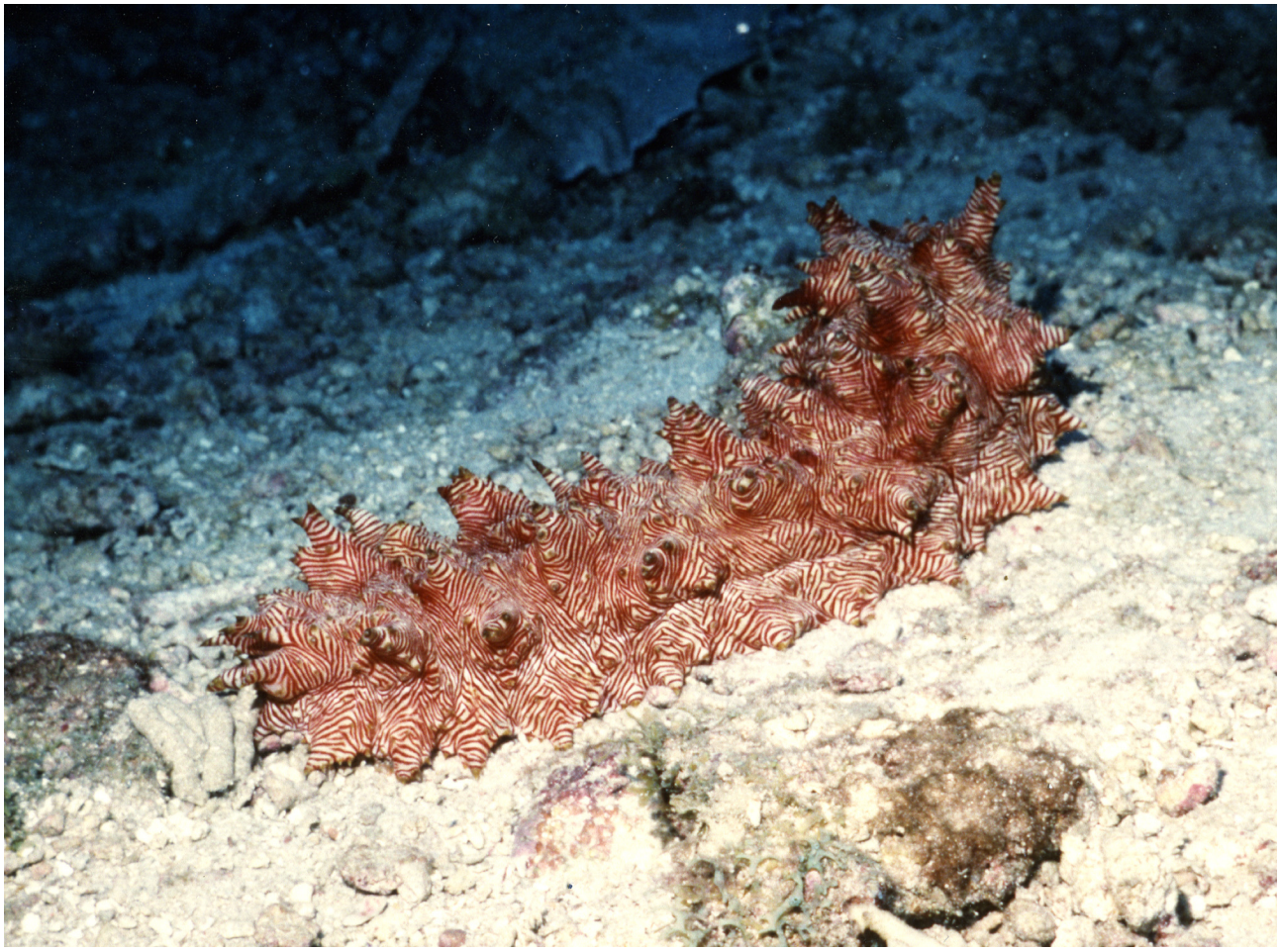

FIGURE.4. *Thelenota rubralineata* Massin & Lane, 1991, perhaps one of the most charismatic sea cucumbers described by Dr Claude Massin. (courtesy of Dr Claude Massin).

In honor of the important taxonomic work of Claude Massin, fellow taxonomists described three eponyms after him: the sea cucumber genus *Massinium* Samyn & Thandar, 2003 (this genus currently comprises 14 species, 11 of which have been established since the genus *Massinium* was described), the sea cucumber *Scoliorhapis massini* O'Loughlin & VandenSpiegel, 2010 and the gastropod species *Leptoconchus massini* Gittenberger & Gittenberger, 2011.

Claude left behind the bulk of the collections under his care in the RBINS in good order as in case of the Hydroidomedusae collection for which he elaborated a detailed catalogue together with his mentor J. Bouillon and his technician R. Kresevic (Bouillon *et al*. 1995). Same applies for the echinoderm collection with special interest to the Holothuroidea for which he assembled not only ±90-95% of the available taxonomic literature, but from which he constructed an important reference collection of ossicles permanently mounted on microscopic glass slides, several thousands in number, serving as an important identification tool. These slides with mounted ossicles have been complemented by hundreds if not thousands of other such slides holding ossicles from types that were sampled in other museums worldwide: Paris, London, Copenhagen, Hamburg, Moscow, Amsterdam, to name some. All these holdings have always been accessible at the RBINS to researchers worldwide, either through loans or to visiting scientists coming to Brussels from all over the world.

Claude's life was characterized by some strong recurrent themes: he was always lauded as a true gentleman, rather introvert in nature, but with a sharp listening capacity and always searching for solutions to the problems he was asked, whether they were human or scientific in nature. If of the former nature, Claude tried not to judge, but find compromises; if of the latter nature Claude always acted very meticulously, trying to fix the smallest details because as a taxonomist he was fully aware that even the slightest slip of the pen or misinterpretation could have grave consequences for future taxonomic studies as well as for studies relying on them. Claude was also a very mod-

est man, never trying to get credit for something for which he himself thought not to be credited for. He was also a generous man when it came to publishing, which explains why some of his publications hold names that somehow seem a little alien to the subject of the paper. Finally, it needs mentioning that when Claude was asked to perform tasks such as peer reviews of manuscripts or projects or checking of data/quota for, for instance, CITES-meetings, he always carried these out in a very detailed, scientific, well-founded way, within the imposed deadlines, suggesting improvements wherever and whenever he could.

In the coming years, the author, most possibly aided by other colleagues who have enjoyed working with Dr Claude Massin, will do his best to further validate Claude's important legacy and this for the future of taxonomy, mother of all biological sciences on which the safeguarding and sustainable management of biodiversity depends.

Claude, passed away on 4 September 2021, peacefully, but regretfully after a long illness that profoundly affected his academic and private daily life for many years.

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