The mollusc collection at the Upper Austrian Museum in Linz (Austria): History of curatorial and educational activities concerning molluscs, checklists and profiles of main contributers

Erna Aescht & Agnes Bisenberger

Abstract: The Biology Centre of the Upper Austrian Museum in Linz (OLML) harbours collections of "diverse invertebrates" excluding insects from more than two centuries. This curatorship exists since 1992, since 1998 temporarily supported by a mollusc specialist. A historical survey of accession policy, museum's remises, and curators is given starting from 1833. Our publication activities concerning malacology, papers related to the mollusc collection and experiences on mollusc exhibitions are summarised. The OLML holds more than 105,000 recorded, viz largely well documented, about 3000 undetermined series and type material of over 12,000 nominal mollusc taxa. Important contributers to the predominantly gastropod collection are Karl Wessely (1861–1946), Josef Ganslmayr (1872–1950), Stephan Zimmermann (1896–1980), Walter Klemm (1898–1961), Ernst Mikula (1900–1970), Fritz Seidl (1936–2001) and Christa Frank (married Fellner; *1951). Between 1941 and 1944 the Nazi regime confiscated four monasteries, i.e. St. Florian, Wilhering, Schlägl and Vyšší Brod (Hohenfurth), including also molluscs, which have been transferred to Linz and later partially restituted. A contract discovered in the Abbey Schlägl strongly suggests that about 12,000 specimens contains "duplicates" (possibly syntypes) of species introduced in the 18th century by Ignaz von Born and Johann Carl Megerle von Mühlfeld. On hand of many photographs, particularly of taxa sized within millimeter ranges and operated by the stacking technique (including those endangered in Upper Austria), eigth tables giving an overview on persons involved in buidling the collection and lists of countries and genera contained, this article intends to open the mollusc collection of a provincial museum for the international public.

Key words: Bivalves, gastropods, molluscs, world wide museum collection, history, regional Red List, Upper Austria.

Front cover of the inviation to the opening of the exhibition in the Biology Centre of the Upper Austrian Museum in Linz popularising mainly gastropods for pupils, the majority of visitors in this instituion. It shows Polymitra venusta licenced by I. Arndt (Germany). The title may be roughly translated as "Extend the feelers! Snails in their full splendor".

This project gave rise to strike the balance of the mollusc collection in Linz presented on the following 91 pages. We focus on microscopic species because very many macroscopic photographs are dispersed in the booklet for the general public accompaniing the exhibition, recognisable as "Foto: OÖLM". In an extended form, viz. "Oberösterreichisches Landesmuseum, Linz" including the person taking the photo, the same applies to the 505 paged contribution of Christa Frank on the cultural history in this volume. The scientific relevant data on the labels of these figured specimens are of course available upon request. We, the senior author as editor of this volume and the junior author as scientifically responisible curator of the exhibition, emphasise and would like to prevent forgetting that the overwhelming majority of exposed (and/or figured) specimens have been collected by Fritz Seidl (1936–2001) and Christa Frank.

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Contents

Introduction

In Upper Austria a "cabinet of curiosities" is reported at the beginning of the 17th century in the castle Helfenberg of Wolf von Oedt (ZIBERMAYR 1933: 81), but first „Conchylia" [diminutive of Greek "conch", shell; formally including also non-molluscs, e.g. unicellular foraminiferans and brachiopods] are documented in the Sternwarte Kremsmünster (KRAML 2018). Since 1833 a mollusc collection has been assembled in the Upper Austrian Museum in Linz, the third largest city of Austria, the extent of which only ranges behind that of the Natural History Museum in Vienna. The description of the eventful history of building such huge gathering (for an overview in German see AESCHT 2003, 2013) will show that the relationships between Linz and Vienna might be closer than suspected.

The purpose of this paper is to open and popularise the mollusc collection of a provincial museum for the international public. As an outcome of the overview, the diversity of mollusc genera and (super)families in space and time represented in our collection is documented. Moreover, some experiences with mollusc exhibitions and our publication activities concerning malacology in Upper Austria and beyond are summarised. Hopefully in future, Austrian and foreign students and taxonomists will be attracted by the collection and the exchange of specimens and scientific publications will increase.

Proper museum work cannot be taken for granted, especially when it comes to funding and support. With this contribution we hope that the collection in Linz, the size of which would certainly justify an own curator, is increasingly conceded as an invaluable and irreplacable source of knowledge on the molluscs of the world. The specimens, recently collected and/or documenting previously existing species, have to be viewed as part of our natural and cultural heritage.

Current localities and spatial conditions

The first permanent and real museum of the Federal State of Upper Austria is still frequently called Francisco-Carolinum and hosted the mollusc collection between 1895 and 1992 (Fig. 1).

At present, apart from some contributions to the permanent exhibitions in the Castle Museum (Fig. 2, 3), the mollusc collection is housed at four locations in two buildings, viz. the Biology Centre (Johann-Wilhelm-Klein-Str. 73, Fig. 4, 5) and the depository in the street Lindengasse 7 (Fig. 6):

1. basement, cellar (wet material in alcohol);
2. loft in the 2nd floor (unpublished catalogues, microscopic slides of molluscs);
3. my office and/or laboratory (inserenda, small permanent collection of invertebrate "ground plans", often used reprints and books);
4. half of the 3nd floor of the depository Lindengasse (dry mollusc series as well as journals, reprints, books and biographic documentation related to them)

The three-storied "depository Lindengasse", about 3 kilometers away from the Biology Center, since 1983 houses the large preparations of the vertebrates, the second largest mollusc collection in Austria since 2003 and the "Microcosm Archive" since 2016 (see AESCHT 2018). Capacities for further collections are only available through compression, which in turn costs a lot of working time.

Short history of the institution focused on curatorial and educational activities

The historical landmarks, former spatial conditions and responsible custodes (from Latin "custos", keeper) relevant to the natural history collection are listed chronologically in the following overview (keywords are in **bold**, own annotations in square brackets). Precisely because these statements are often very general, the marginal position of the naturalists, and especially of the invertebrates in Upper Austria, becomes clear (for details see AESCHT 2003, 2018). The history of the all-purpose (also called "universal") museum has been described on several occasions, mostly restricted to culture and art (KOHL 1983; PROKISCH & DIMT 1995; RIDLER 2016). Experiences with mollusc exhibitions and our publication activities (popular and scientific) concerning malacology in Upper Austria and beyond are documented for the first time.

Roots in the first third of the 19th century

The origin of the scientific collections of the Museum can be traced back to the year **1833**, when the "Verein des vaterländischen Museums für Österreich ob der Enns mit Inbegriff des Herzogtums Salzburg", which means Association of the National Museum for Austria above [the river] Enns including the duchy of Salzburg, was founded. Today this organisation as "Oberösterreichischer **Musealverein**", called for short **Museum Association**, is restricted to Upper Austria and still exists. At that time the president of these now two provinces, count Alys Ugarte (1784–1845) dedicated that "natural production" and "industry" were grouped together as a task circle (ULM 1983; own translation), anticipating the term "applied" natural science. Thus, during the beginnings practical aspects like pest species, weeds, abnormalities and the collection of single speci-

Fig. 1: The Francisco-Carolinum in Linz in the 21st century harbours the library, the administration and the Galery of the Federal State of Upper Austria. All photographs herein by courtesy of the OLML except few specified separately.

Fig. 4, 5: The Biology Centre is not a new building, but a reconstruction of the former home for the blind from 1991 till 1992. Arround 155 m² can be used for exhibitions; guided tours are well booked. The house is surrounded by a 1,2 hectar large "Ökopark", i.e. an ecological park showing diverse biotopes including an artifical pond. Therefore, a place for teaching and recreation, which is visited by about 18,000 people per year.

Fig. 2, 3,: The Castle Museum, which harbours the collections of cultural history since the 1960s, might be considered as the largest universal museum of Austria on a single place having around 3500 m^2 for exhibitions. Its south wing was destroyed in a fire around 1800; a decision to rebuild it was made in 2006 and the modern "reconstruction" was finished in 2009.

Fig. 6: Depository "Lindengasse" is named after the street where it is situated. At special occasions guided tours show the usually hidden background.

men or (male and female) couples like for "Noah's ark" were of interest. Consequently "duplicates" of the seemingly essential type have been set apart for exchange and to save space. During the 19th century members of the Museum Association, viz. honorary curators, looked after the enlargement and conservation of the collections.

Since **1835** annual reports and statutes of the Museum Association were published and objects were stored in a house in the centre of Linz ("Ständisches Expeditorhaus" at the street "Promenade"). The first news of a small collection of molluscs can be found in the second report of the Musealverein in the year **1835**, because Secretary of State Franz Anton Alexander von **Braune** in Salzburg launched a conchylia section. The third report in **1839** lists further 64 mollusc exemplars donated by the famous citizen Joseph **Traxlmayr** and in addition two specimens by the honorable bishop of Linz Gregor Thomas Ziegler (Anonym 1839: 82f.).

As early as **1840**, „as a result of a large donation from Adolf von Barth-Barthenheim, the purely regional attitude to Upper Austria was left...". It was also noted that the snail and shell collection enjoyed a certain preference, because the merchant Ludwig Angerer in Linz donated land and sea water conchylia (KERSCHNER & SCHADLER 1933: 439).

In **1841** Mag. Pharm. Franz Karl **Ehrlich**, born in Wels, was appointed curator [until 1880] (ULM 1983: 24). Several hundred specimens of 29 genera ("Geschlechtern") of the molluscs were reported in the division of the invertebrates (Anonym 1841: XLIV).

When, in **1861**, a zoological travelling show, as was popular at that time, was present in Linz, some of the seashells showing exciting shapes or colours were purchased.

On the occasion of the World's Fair in Vienna **1873**, the inventory was differentiated in „native" and „foreign" zoological objects embracing 446 and 330 mollusc specimens, respectively (Anonym 1873: 24f.).

The post officer, herpetologist and beetle researcher Emil **Munganast** (1848–1914) is mentioned as the first person interested in conchilia in **1874**. Until his death he belonged to the administration of the museum and was President of the Association of Natural History since 1905.

In **1875**, the widow of Christian **Brittinger**, a pharmacist in Steyr, donated his extensive conchyli a collection, mostly native species. Around **1882** there were seven rooms with 28 cupboards available, containing the collection mainly consisting of vertebrates and conychlia.

Fig. 7: *Trochita nevae* [likely novae] *zealandiae,* collected by Andreas Reischek in New Zealand before 1900 and very likely prepared by himself.

In **1883** a new custos was appointed with, the high school teacher Hans **Commenda**" (ULM 1983: 24). According to SPETA (1995: 2), crabs, worms, shells and snails were represented by 600 exemplars [this would correspond to a reduction compared to the count of 1873].

In **1890** Miss Marie **Rucker**, a private person in Linz, donated a snail collection, thus showing her interest for the natural history department.

Abbot Leander **Czerny** (1859–1944), professor at the gymnasium Kremsmünster since 1890, first collected snails in **1893** under the supervision of Anselm **Pfeiffer**, the well-known Benedictine priest and conchologist of Kremsmünster, before turning to the field of flies (GUSENLEITNER 1983: 141). In **1899** a donation of a snail collection by Eduard Haydvogel from Bad Hall is mentioned.

From **1893** until 1902, the collector and taxidermist Andreas **Reischek** (see also page 661) was the first "professional" preparator, who took care of the zoological collections and arranged the specimens for presentation in the future museum. According to KERSCHNER & SCHADLER (1933: 452) Reischek was most active in the determination of the snails, very likely supervised by Rudolf **Sturany** (see also page 662), the custodian at the Natural History Museum in Vienna. Reischek set up a showcase for exhibition purposes, many objects were mounted on black wooden pedestals and relabelled in calligraphic script, according to a specific scheme, on typical, narrow, black-framed labels (Fig. 7). Unfortunately due to this standardisation has obviously sometimes been sacrificed to important data, which is all the more regrettable because in some cases the old labels

were either thrown away or lost later. The exhibition was set up in three parts on the ground floor of the museum, the molluscs occupying the west wing.

On 29 May **1895** the building Francisco-Carolinum in the Museumstrasse 14 (Fig. 1), named after its first protector Franz Karl (since 1839), the father of Emperor Franz Josef I, was inaugurated by the latter.

Inventorisation since 1914

As far as the meticulous endorsements of collections of uncertain extent in the annual reports of the Museum Association and the 150-year commemorative publication (KERSCHNER & SCHADLER 1933). However, due to the lack of an inventory which was taken regularly only from 1914 and often missing or mixed original labels specific provenances can hardly be assigned for sure. The first documented proof, not only theoretical, comes from 1863, an *Orcula scyphus* [currently *Schileykula scyphus*] collected by Heldreich. Subsequently we focus on significant events and activities.

Since **1914** the first scientifically educated curator Dr. Theodor **Kerschner** (1914–1945) was employed and thus collection management improved (see also page 647) and a first special exhibition of lepidoperan insects and a set of antlers was shown from 19 June–6 July **1919**.

Between 1914 and 1919, the replanting of 24 aquariums set up on the ground floor was undertaken and snails were put in to fill them (Anonymous 1919: 11f.). In 1918, the zoological department received gastropods and bivalves from the Adriatic from the butterfly researcher Josef **Klimesch** (1902–1997) gastropods and bivalves from the Adriatic and collectibles of his father from Brazil, Kamakura (Japan), etc. (Anonymous 1919: 5f.). In **1919** we find the following euphoric note: „We are in a good position to show representatives of our national fauna for two groups of animals [one concerning the lumbricids], for which we had no study collection so far... it is a collection of palaearctic gastropods, mainly from Upper Austria and Salzburg, which, with the exception of the freshwater inhabitants, for which there is still much to be added from our lake areas, has a rare completeness [5000 specimens in 85 species]. It forms the basis of our domestic collection partially collected and cared for by Karl **Wessely** (see page 646).

In **1920** the museum was handed over to the Federal State of Upper Austria. Through the mediation of Professor Wessely the LM received [1920] the gastropod collection of the late Munich naturalist and poet Karl **Reuleaux** (1826–1902), who published on molluscs, from the school management Lungötz in Lammertal. The material, about 90 series, is primarily from Bavaria, Upper Austria and Salzburg, but also from Mediterranean islands. The Lungötz school administration received duplicate material in return according to KERSCHNER (1922: XVII). This represents the **only exchange note** in the collection „Evertebrata varia".

Already in **1931** exists a basic statement to construct a new building for the natural history collections due to space restrictions (LIPP & DIMT 1978). It was fulfilled only at the beginning of the 1990s, except that it was a reconstruction of the then home for the blind lasting until 1992 (see page 601).

Due to the lack of space, large collections, particularly molluscs, were being moved to depositories in the buildings of the Allgemeine Sparkasse and the brewery at the lower Danube region in **1938.**

Between 1943 and 1946 the museum was closed; important events during **Worldwar II** are described below (see page 637ff.).

In **1949** the anthropologist Ämilian **Kloiber** (1910–1989) received the position as zoologist. On February 1 **1952**, the entomologist Helmut Heinrich Franz **Hamann** was entrusted with the agendas of the botanical and invertebrate collections. In **1955** the shell and snail collection still remained in the brewery.

As early as **1963**, Hamann borrowed snail shells for advertising photographs (KLOIBER & HAMANN 1964: 64), an increasingly popular aspect of natural history museums. The collector and tropical traveller Emmerich **Schlosser** from Peilstein, after 10 years stay in Australia and new Guinea, provided very extensive collections, mainly marine mussels and snails, and folkloristic articles to Upper Austria. He was assisted in the evaluation of the material and the establishment of a large exhibition in Linz by Hamann. On October 19, **1964**, the opening of the shell and New Guinea exhibition on Schlosser's collection took place in the Theresiensaal in Linz (HAMANN 1965: 47f., 51). In **1964** a larger number of sea shells and snails were borrowed by Prof. Dr. **Pichler** from the Bundesrealgymnasium and its pupils for the purpose of a school exhibition.

Except a revision of all vouchers in 8 days by Walter **Klemm** (see page 647ff.), the 1960s and 1970s were relatively uneventful concerning the mollusc collection. In **1968** a large part of the still exposed larger pieces of sea shells were placed in the ordered boxes and deposited on the second floor (HAMANN 1969: 60).

Between 1970 and 1974 as well as 1979 and 1981, the botanist Univ.-Doz. Dr. phil. Franz **Speta** has been provisional custos of the invertebrate collection, in between the entomologist Günther **Theischinger** looked after it. From 1993 to March 2003 the former

Fig. 8, 9: Poster of the exhibition on "Mussels and Snails of the Sea" presented in the building Francisco-Carolinum in Linz 1985 (**8**) and insight to the presentation (**9**).

was divisional head of the "natural sciences" section of the Upper Austrian Museum until his retirement in 2003.

On March 2, **1981**, the entomologist Mag. Friedrich („Fritz") **Gusenleitner** followed Theischinger, who emigrated to Australia. The former started to take an specific inventory of invertebrate objects and a detailed bibliography of natural science topics as well as first records related to Upper Austria (GUSENLEITNER F. & J. GUSENLEITNER 1983, 1992).

In **1985** the Evertebrata collection situated on the 1st floor were moved to the ground floor. The wet preparations on the ground floor could be accommodated in a newly adapted basement room (GUSENLEITNER 1986: 53). In the period from February to July **1985**, a special exhibition on „Mussels and Snails of the Sea" was presented at Museumsstraße 14, designed by Fritz Gusenleitner together with the collectors Hans Jörg Lechner and Heidi Winkler (Fig. 8, 9). Additional loans from the local Department of Folklore (Dr. Gunter Dimt) and the Natural History Museum Vienna (Dr. Erhard **Wawra**) completed the exhibition. Countless guided tours were performed by Gusenleitner in the course of the exhibition (GUSENLEITNER 1986: 53). In 1991, Wawra also took part in the exhibition „Living in the coral reef" in the castle museum with many molluscan loans.

In **1992** the entomological collection became separated from the invertebrate collection (formerly called "Evertebrata varia" collection). The date of the beginning of the curatorship of the senior author was 2 January in the Francisco-Carolinum, in an office located on the first floor (further details including a biographcial note and bibliography see AESCHT 2018). In December 1992 the complete natural science section moved to the "Biology Centre" (Fig. 4, 5), a term choosen by the administration, because in Upper Austria there exists no biological faculty of the university.

Concerning the mollusc colletion, the cooperation between senior and junior author of this contribution since **1998** has to be emphasised (see also page 608). Few words on the background of Mag. Agnes Bisenberger (Fig. 13, 30): born in 1965 in Linz. A degree from the Business and Foreign Languages Academy at the University of Salzburg in 1985 was followed by a double degree in Veterinary Medicine and Biology at the University of Vienna and in 1993 the Magistra of Science. Freelance colleague at the Psychotechnisches Institut Wien (1991–1993), Natural History Museum Vienna (1993–1997), mainly restoration and preparation work in the scientific collections, planning and implementation of the FWF research project „On the evolution of high mountain forms: phenotypic and genetic characterization of alpine *Arianta*-Populations (Gastropoda, Helicidae) „, Konrad Lorenz Research Center, Grünau im Almtal (1997–1999, as a research assistant, including hand raising greylag geese and experimental studies on social learning). Since 1998 employee (part time) of the company Bogner & Lehner OEG (meteorology, hydrology, biology) and free lancer at the Biology Centre, in the mollusc collection.

Bisenberger is co-editor of the mollusc magazine „Arianta" and received the Theodor Körner Prize for

Fig. 10: In the 3rd floor of this building in Braunau am Inn Fritz Seidl assembled one of the biggest private mollusc collections in Austria over more than 30 years.

Fig. 11: Insight to one of the 24 doors of four Seidl's store chests (17 meters in total). 115 of the 650 drawers are covered by blue or grey velvet.

Science and Art in 1997 for her research project „First Field Examinations on the Biology and Ecology of *Cylindrus obtusus* Draparnaud 1805 (Gastropoda, Helicidae)". Since 2000 married to Mag. Manfred Bogner and mother of a son and a daughter.

Additionally educated in Animal Assisted Therapy (graduation in 2008 at the Veterinary University of Vienna). Foundation of the ongoing project "Natur auf Tour" (Nature on Tour) in 2008, supervising up to 50 projects with living animals for school classes per year, mainly concerning snails and other invertebrates (about 900 children every year between march and june).

In January 2016 Bisenberger was awarded the title "Counselor of Science of the Upper Austrian government" (see page 607), founding member and member of the executive board of the molluscan society MOFA (Molluskenforschung Austria) since August 2016, a platform for malacologists in Austria (www.molluskenforschung.at).

A considerable extension into the former unused loft of the Biology Centre for the natural sciences collections was enabled during 2001 (further details see AESCHT 2018). From **2002** to 2016 small parts of the old mollusc collection, viz. bigger-sized speciemens, were situated there.

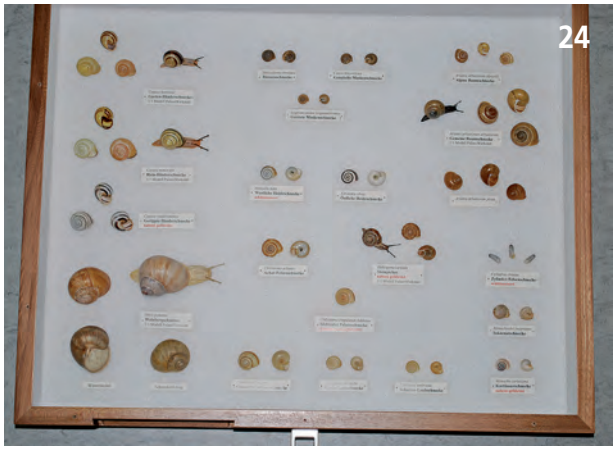
Fig. 12, 13: Lenka Vanova and Roland Zarre wrapping up shells of a drawer (**12**); the authors of this paper handling unsorted series remaining from the German Benedictine Abbey of Ottobeuren (**13**).

Fig. 14: Alcohol preparation of a mussel species (*Lepetodrilus ovalis*) from the deep sea collected by Monika Bright of the University of Vienna.

Fig. 15: Presentation of molluscs in the exhibition on the deep-sea hydrothermal vent fauna in the Biology Centre 2006.

Fig. 16-18: Insights to the presentation of mollusc diversity in the exhibition "Phenomenon Life", which took place in the the Castle Museum in Linz: Special holders (**16**) for big shells had been cut to size by our preparator Roland Rupp. Gastropods of different size classes were displayed as well as photographs and graphics (**17**) of Alfred Kubin, a famous Upper Austrian artist. One section regards the history of collecting systems (**18**).

Fig. 19-25: The permanent exhibition under the title "Nature Upper Austria" in the Castle Museum embraces a special section "collection for studying": Regarding molluscs we presented 7 drawers showing native bivalves (19), freshwater (20, 23) and soil (21—25) gastropods as well as an installation of endemics versus neobionts (23) and models of slugs (25).



1st substantial increase in 2003

The relocation of the molluscan collection Fritz Seidl (see page 650ff.) from Braunau am Inn (3rd floor with narrow spiral staircase; Fig. 10) to the 3rd floor of the depot Lindengasse (lift only up to the 2nd floor) took place from 12–22 May **2003** with great logistical effort, viz. the 1 : 1 transfer of more than 40,000 series from 650 drawers (Fig. 11). Helping hands from all departments were necessary and their names should be remembered: Norbert Humer, Jürgen Plass, Markus Radinger, Josef Schmidt, Lenka Vanova and Roland Zarre (Fig. 12), beside the authors of this paper (Fig. 13 + Ottobeuren), who later took care of the unpacking and re-installation in the new location.

After Agnes Bisenberger had recorded the manual and typewritten catalog with 38,130 serial numbers of Seidl EDP-moderately during 2004, we both created a location directory and began to take an inventory of the loose material (currently 42,110 numbers from 176 states), which is not yet completed. The large subject-specific library of Seidl with 279 books and over 3000 reprints is now electronically recorded, mostly by the senior author, a third of it by the volunteer Georg Lummersdorfer (Grammastetten).

In **2005** fact sheets on *Arianta arbustorum*, *Arion lusitanicus* and *Lymnaea stagnalis* have been prepared for teaching purposed in the "Ökopark", i.e. an ecological park showing diverse biotopes including an artifical pond, surrounding the Biology Centre. On November 23, **2005**, around 13,000 series of molluscs from the old collection were transferred to Lindengasse depot, which also corresponded to a reorganization.

In **2006**, Jan **Steger** volunteered for the photographic documentation of the Deep Sea collection (Fig. 14) and the pre-sorting of the historic monastery collections (see page 637ff.) and participated for one month in 2007 in the documentation, conservation and literature review of selected species of the mollusc collection. In the exhibition on the deep-sea hydrothermal vent fauna in this year, original samples collected by Monika Bright of the University of Vienna were presented (Fig. 15). A huge volume in Denisa was written by a large collective of authors, who give fact sheets on many diverse taxa, among them 33 mollusc ones, specific to hot vents (DESBRUYERES et al. 2006).

2007 was dedicated to the exhibition „Phenomenon Life: Evolution and Modern Genetics" (24 October 2007–25 March 2008) in which a third of the current diversity of molluscs (Mollusca), the second largest animal strain after the arthropods, was dedicated. For the first time, parts of the Seidl collection, especially the particularly diverse marine molluscs, were presented in public. We have sighted and largely transferred approximately 1000 series of 668 species for the exhibition (Fig. 16–18). This undertaking was hampered by surprising renovations in the depository Lindengasse. The original shells were supplemented by numerous photographs of living animals bycolleagues and three film sequences by Hermann Oberndorfer (Linz) on terrestrial snails, Dr. Ing. Dr. Pedro Galliker (Andermatt) on the ontogenesis of freshwater gastropods and Mag. Karl Überriegler (Salzburg) on functioning of the radula.

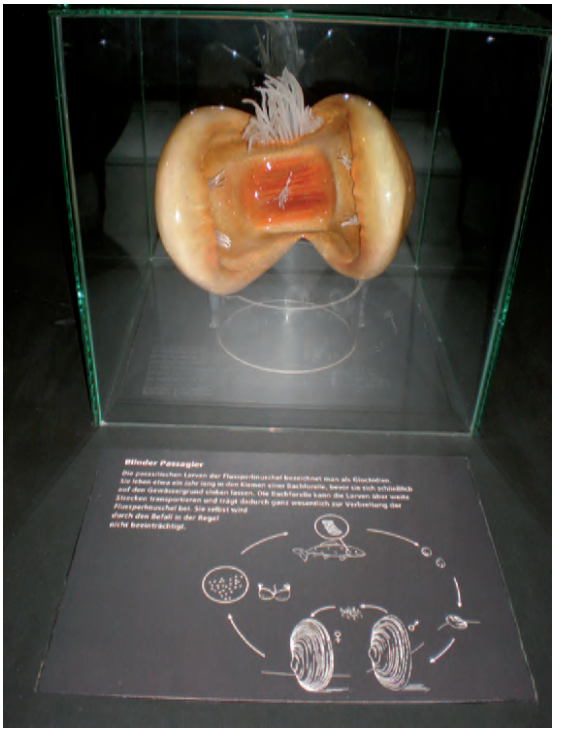


Fig. 26: Model of a glochidium and graphic to the ontogenesis of *Margaritifera margaritifera* in critical danger of becoming extinct in Upper Austrian and other countries.

In **2008** preliminary works started for studying and presenting about 300 species of molluscs of the federal state of Upper Austria, beside further invertebrates, for the permanent exhibition under the title „Nature Upper Austria" in the Castle Museum opened in 2009.

2st substantial increase since 2009

Since **2009**, due to Prof. Dr. Fritz **Steininger** of the Krahuletz-Gesellschaft Eggenburg and former director of the Senckenbergmuseum in Frankfurt (Germany), we have been able to include the huge mollusc collection of Christa Frank (further details see page 653ff.).

At the end of **2011** there was a small focus on molluscs with four contributions (see Aescht & Bisenberger, Bisenberger, Schrattenecker-Travnitzky, Steger & Bisenberger), especially regarding the collection, in our publication series "Beiträge zur Naturkunde Oberösterreichs" (Fig. 27). The most important results of our study (AESCHT & BISENBERGER 2011), which is based on an evaluation of 13,683 determined voucher series of Upper Austria, are briefly summarized: A total of 293 species,

Fig. 27: Cover of one of our publication series meaning contributions to natural history of Upper Austria. Volume 21 included four contributions on molluscs.

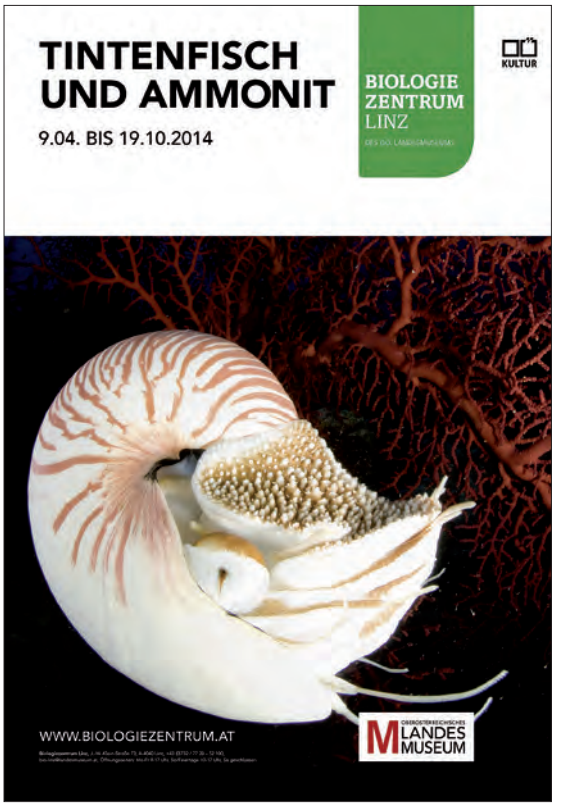


Fig. 28: Poster of the exhibition on cephalopods in the Biology Centre 2014.

Fig. 29: Insight to the exhibition „Myth Beauty. Facets of beauty in nature, art and society" in the Castle Museum Linz 2015/2016. Most specimens had been taken from the collections of Fritz Seidl und Christa Frank.

of which 267 snail taxa (Gastropoda: 202 terrestrial, 65 aquatic) and 26 mussel taxa (Bivalvia), respectively; including 34 (sub) endemites and 29 neozoa. In a table, all Upper Austrian taxa were classified in terms of their vulnerability compared to the current Red List of Austria. In the text you will find detailed comments and information on the previous findings (references, unpublished evidence, inter alia, by Friedrich Mahler and Jan Steger) endangered species, endemic taxa, species of the Fauna Flora Habitat Directive (FFH) and Neozoa. Even false reports are discussed. Therefore, about 30% of snail and mussel species, respectively are endangered to vary-

ing degrees. Due to the lack of up-to-date taxonomic treatments and / or newer distribution data in several groups, as well as massive staff shortages, the current level of knowledge is incomplete, which is why there is an urgent need for research on this important mollusc classes.

In 2011 a tour demonstrating indigenous molluscs was installed in the park around the Biology Centre by Bisenberger. Original shells of selected bivalves and gastropods living in Upper Austria are presented at 24 stations in their preferred living space. The tour enjoys great popularity and is integrated into 2019's exhibition on snails.

An exhibition on cephalopoda, termed "Tintenfisch und Ammonit" (11 April – 21 October 2014), was curated by palaeontologist and geologist Björn **Berning** in the Biology Centre of the Upper Austrian Museum (Fig. 28). In this year, 267 photographs of marine species of the Seidl collection were added to the project and internet plattform OpenUp! (Opening Up the Natural Heritage History for Europeana).

In **2015** the exhibition "Myth Beauty. Facetes of the beautiful in nature, art and society "(6 May 2015–10 January 2016) at the Castle Museum Linz, Aescht curated the part on nature and wrote an extensive, richly illustrated contribution to the catalogue, e.g. refering to mollusc scientific names expressing beauty in Latinised language (Aescht 2015). Half a million plant species and two million animal species are currently described. Their immense variety and variability have been shown in the two largest groups, insects, especially butterflies and beetles, and molluscs. The focus was on their variety of shapes and colors in the tropics and in the sea. The exhibits were selected for the exhibition primarily according to aesthetic criteria and elaborately arranged as a „framing" in 144 insect boxes (Fig. 29, 35, 40) by Bisenberger and Bodnar, 30 of which were reserved for the arthropods. In the scientific everyday life necessary detailed information on locality, date, collectors and species names as well as a conservatory optimal (e.g. light-protected) and extremely space-saving accommodation in boxes exceptionally remained in the background.

Fig. 32: Storage system of mollusc wet samples in the cellar of the Biology Centre.

Fig. 30: Consultant celebration of Agnes Bisenberger holding certificate surrounded by her family and Governer Josef Püringer (2nd right), Gerda Ridler, the then Headmistress of the OMLM (1st right). Standing in the 2nd row: Friedrich („Fritz") Gusenleitner, the then area manager of the Biology Centre (1st left), family, Erna Aescht (2nd right) and Erzsebet Bodnar (1st right), invertebrate collection assistant. Foto: Federal State of Upper Austria.

Fig. 31: Mag. Agnes Bisenberger developed the project „Nature on tour" in Linz in 2008, in order to bring closer to (city) children living animals, here an agate snail. Foto: Agnes Bisenberger.

On 18 January **2016**, the title of „Counselor of Science“ (Konsulentin für Wissenschaft) was awarded by Governor Dr. Josef Pühringer to Mag. Agnes Bisenberger, a snail researcher recognized beyond the borders of Upper Austria, pioneer in animal-assisted nature mediation (project „Nature on Tour“) and highly valued, longtime collaborator in the Biology Center's invertebrate collection (Fig. 30, 31). Holiday trainee Ines Blatterer showed herself to be very skilful and fast in photographing and researching paratypes of 48 species of molluscs and 28 special species as well as the Hubert Blatterer collection (more than 500 copies), leaving a total of 3165 photographs after one month.

As part of the 50th anniversary of the Schlossmuseum Linz, Aescht presented the collection „Invertebrates“, in particular the freshwater pearl mussel, in a film and two catalog entries and in the exhibition „50 Years – 50 Objects / Treasures of the Upper Austrian Provincial Museum“.

In summer **2017**, the alcohol preparations of molluscs were systematically reorganized, large parts were transplanted (Fig. 32) and recorded by EDP. Especially active were Erzsebet Bodnar, Agnes Bisenberger and the summer trainee Ines Blatterer.

In **2018** started the preliminary works for the exhibition (17 May 2019–1 March 2020) on gastropods entitled „Streck die Fühler aus!“ Schnecken in ihrer vollen Pracht” which may roughly be translated as Extend the feelers! Snails in their full splendor. This exhibition , curated by Agnes Bisenberger and Alexandra Aberham, is accompanied by a booklet of 72 pages for the general public, and a special volume of our journal Denisia with the title “Molluscs – Contributions to cultural history, research and collections from Austria” written by 23 authors and a single-authored volume by Hubert Blatterer on “Mollusca of the Dahab Region (Gulf of Aqaba, Red Sea)”.

Overview of curating and the components of the mollusc collections

Modes of documentation

In 1993, when a computer for each curator became available, I started a **collection database** with an inventory of individual series and the basic fields (genus, species, original designation on label, inventory and storage number, preparation method, collector and/or donator, sampling site and collection date). Important fields for molluscs are the inventory year (or the abbreviation ALT if of unknown aquisition before 1992), two counting inventory (sub)number and effective storage fields, viz. Kasten (K [crest]), Tür (T [door]) and Lade (L [drawer]). The OLML holds more than 105,000 recorded, viz largely well documented, about 3000 undetermined series and type material of nearly 50 species. These records are distributed over 12,000 nominal mollusc taxa, i.e. bi- or trinomina taken from the labels and subgeneric proposals omitted. Of course the assignment to currently valid taxa is an endless procedure in need of specialists.

Parts of the old collection of molluscs were recorded EDV-moderately by Mag. Doris Müller between July 1995 and January 1996 over Werkvertrag. The completion of data entry, partly re-labeling and the reorganization of the collection took place in several contracts between 1998 and 2002 by Agnes Bisenberger, who has since contributed significantly to the proliferation of the collection itself. The data of the original catalogue of Fritz Seidl are already included in our relational database (ZOBODAT; cp. MALICKY & al. 2003). The complemented mollusc collection data will be moved to ZOBODAT within the next few years. Apart from biogeographical data, you can also find biographies and bibliographies of many Austrian biologists at www.zobodat.at.

The main collection database (in access format) is termed “Evertebrata varia Kollektion” (for short EvarKoll) according to the dichotomy invertebrates (in German “Wirbellose (ohne Insekten)”) and insects. It is accompanied by the **literature database** (“BIB_all”), where each reference is characterised by a six-digit alphanumerical literature code or signature field (e.g [FSdl01]; given in square brackets in the reference chapter), where the first two of four digits refer to a special separate collection, here Seidl, or with [EV1001] to taxonomy, while the last digits are consecutive numbers. If no physical reprint or pdf is available the signature field starts with “E” (for external) or has less than six-digits. At present, it contains more than 50,000 references regarding biology including its popularisation.

The **taxa database** for molluscs is still under construction, where via a unique numerical species field the nomenclatural author(s) and year of publication as well as subsequent new combinations with another genus are revealed. Linkages via a genus, family and order field fragmentarily yield the classification. Yet collection, taxa and literature database are linked to a minor extent.

Abbreviations and acronyms

Every visitor of the different locations is faced with abbreviations or acronyms, which can be pronounced as a word, the most frequent are listed, translated [in square brackets] and explained as follows:

ALT	unknown aquisition year before 1992
BNO	Beiträge zur Naturkunde Oberösterreichs
BZ	Biology Centre of the Upper Austrian Museum
ml	"Mollusken lesen" [mollusc pdf for reading]
E	literature reference (yet) without separate or pdf
EV	literature reference to invertebrates, including molluscs
FSdl	Fritz Seidl Kollektion [literature code for publications of Fritz Seidl as author]
LG	Lindengasse-Sonderdrucke bzw. pdfs [separates on molluscs in the despository Lindengasse]
SD	Sonderdruck Kollektion Fritz Seidl [code for the Fritz Seidl separate collection of other authors]
JOOM	Jahrbuch des Oberösterreichischen Musealvereines
LBB	Linzer biologische Beiträge
LM	Oberösterreichisches Landesmuseum [Upper Austrian Museum before 1992]
MP	Mikropräparat [microscopic slide]
NHMW	Naturhistorisches Museum Wien [Natural History Museum in Vienna, including predecessor institutions]
OMJ	Oberösterreichisches Museumsjournal
OLML	Oberösterreichisches Landesmuseum Linz [Upper Austrian Museum Linz after 1992]
PDF	portable document format [also used as literature code]
PP	pdf ungedruckt [used as literature code for non-paper reprints]
SB	Sonderband [unicate of bound volume]
Z	Artikel in Zeitschrift [literature code for publications in journals physically present]
*	year of birth

Publication activities of the OLML concerning molluscs

The Biology Centre of the Upper Austrian Museum publishes five journals, viz. "Linzer biologische Beiträge" (LBB), "Stapfia" (including the series "Stapfia: reports" founded in 2010), "Beiträge zur Naturkunde Oberösterreichs" (BNO), "Denisia" and "Vogelkundliche Nachrichten aus Oberösterreich – Naturschutz aktuell", about ornithology with current information concerning nature protection of Upper Austria. These are the basis for an exchange of publications with other institutions revealing an income of about 900 biological series, unfortuately not included into an inter-library loan system, because there is only one librarian for the whole museum. Our publications are largely written in German (including title and abstract in English) and to a small extent in English, French or Spain.

A synopsis on the occasion of the 20th anniversary of the Biology Centre (GUSENLEITNER et al. 2013) revealed that since 1969 214 volumes, including 1 to 3 issues per year, containing about 3900 papers written by c. 1940 authors from 102 countries with a total number of 91,305 pages have been published. Focused on the period from 2003 to 2012, 10.1 % of them concern botanical and 89.9 % zoological topics; the latter comprise 61.9 % papers about insects, 25.6 % about vertebrates (mainly birds), and 12.4 % about diverse invertebrates (mainly spiders, molluscs, and ciliates).

LBB meaning biological contributions from Linz was founded under another title in 1969 and includes taxonomic contributions, mainly on insects, to a much lesser extent on spiders, molluscs, and protists. Acutally it is on the 5th position in the taxonomic ranking of nearly 5000 comparabel journals by Thomson Reuters: http://www.organismnames.com/metrics.htm?page=tsj, because roughly 2700 species (mostly insects) were newly described within a decade. 26 papers regard molluscs (see reference chapter; for example see Fig. 27).

BNO meaning contributions to natural history of Upper Austria is published since 1993. 6 (co-)authored contributions regard molluscs (Fig. 27; see page 605).

Until 2000 **Stapfia**, which is from then on restricted to botany, also included original research on molluscs (MILDNER 1998; FRANK 1995b, 1997aa). **Denisia** launched in 2001 embraces voluminous zoological monographs, symposia proceedings, and exhibition catalogues. It was named after Michael DENIS (1729–1800), a well-known Austrian amateur lepidopterist as well as a distinguished librarian, poet, and bibliographer who died more than 200 years ago. 51 (co-)authored contributions regard molluscs (see reference chapter and (see page 678–681).

We also contribute to the periodicals of the cultural section of the Upper Austrian Museum, namely the "Catalogues" (**Kataloge des Oberösterreichischen Landesmuseums**), the "Journal" (see below), a short living "Muse" popular booklet, and the "Year-book of the Museum Association" ("Jahrbuch des Oberösterreichischen Musealvereines"; often shortend to JOOM). The former was launched in 1948 and includes 124 volumes until 1984, starting a new sequence (N.F. "Neue Folge") from 1985 (vol. 1) until 2003 (vol. 200) and another series (N.S. "Neue Serie") in 2003 (vol. 1); the last issues in 2018 are vol. 186a-c [sic]. The immense total volume numbers are partially due to double counting, i.e. monographs related to biological exhibitions are also counted as "Catalogues".

The "Journal" (**Oberösterreichisches Museumsjournal, OMJ**) was founded in 1991 for reports on

Table 1: Persons (in alphabetical order) related to the Linz mollusc collection, their living dates (if available), their home countries and the relationship to the museum and/or the major collectors. The amount of series (n) is categorised as 1 < 100, 2 < 1000, 3 < 10,000, 4 > 40,000. Further abbreviations: **Byr** – year of birth, **CF** – Christa Frank, det – recorded as determinator (thus n = 0), **Dyr** – year of death, **EM** – Ernst Mikula, **FS** – Fritz Seidl, ***** publication(s) on molluscs.

Family name	Surname(s)	Byr	Dyr	State	Relationship	n
Adensamer	Wolfgang	1899	1964	Austria	* EM FS	1
Azuma	Masao	1916	2001	Japan	* FS	2
Backhuys	Wim (Willem)	1944	?	Netherlands	* FS	1
Barthelmes	Heinz	1919	?	Germany	* det. FS	0
Berger	Theodor	1887	1956	Austria	LM	1
Bisenberger	Agnes	1965	?	Austria	* BZ	3
Born	Maria	1766	1830	Austria	LM	3
Brabenec	Jaroslav	1903	1978	Czech Republic	* FS	2
Brandt	Rolf Arthur Max	1917	1989	Germany	* FS	2
Bright	Monika	1962	?	Austria	BZ hot vents	1
Butot	Louis	?	?	Netherlands	* det. FS	0
Chan	Sow Yan	?	?	Singapore	* FS	1
Clauss	Eberhard	1932	2013	Germany	* FS	1
Czoernig [Freiherr] von Czernhausen	Karl	1883	1945	Austria	* EM FS	1
Dayrit	Fernando G.	?	2007	Phillipines	* FS	1
Devidts	Joseph	?	?	France	* FS	1
Edlauer	Ämilian	1882	1960	Austria	* LM EM FS	2
Elser	Hubert	?	?	Austria	LM EM FS	2
Erber	Josef	1824	1882	Austria	EM FS	1
Erlinger	Georg	1939	2011	Austria	EM FS	2
Falkner	Gerhard	1942	?	Germany	* EM FS	1
Fischer	Wolfgang	?	?	Austria	* FS	2
Fittkau	Ernst Josef	1927	2012	Germany	* FS	2
Frank	Christa	1951	?	Austria	* FS	4
Fridrich	F.	?	?	Italy	LM	2
Fuchs	Anton	1878	1942	Austria	* LM EM FS	1
Galindo	Jose-Ahuir	?	?	Morocco	FS	1
Ganslmayr	Josef	1872	1950	Austria	* LM	3
Geyer	David	1855	1932	Germany	* LM EM FS	1
Gittenberger	Edmund	1943	?	Netherlands	* FS	1
Götz	Manfred	?	?	Austria	CF	2
Habu	Shingo	?	?	Japan	FS	1
Haldemann	Robert	?	?	Germany	* FS	1
Hardenberg	Peter	?	?	Germany	FS	2
Häßlein	Ludwig	1906	1979	Germany	* FS	2
Hauser	August	?	?	Austria	LM	2
Heiman	Eduard Leib	1936	?	Israel	FS	1
Hemmen	Jens	1944	2012	Germany	* FS	1
Herold	Harry Johannes	1887	1984	Germany	* FS	1
Horst von der	Dietrich [& Renate]	1902	1982	Germany	* FS	3
Jaeckel	Siegfried Gustav Anton August	1907	1986	Germany	* FS	1
Jahn	Alfred	?	?	Germany	* FS	2
Janus	Horst	1922	?	Germany	* FS	1
Jungbluth	Jürgen H.	1940	?	Germany	* FS CF	1
Kaltenbach	Alfred	1807	1876	Austria	* EM FS	1
Käufel	Franz	1892	1956	Austria	* EM FS	1
Kemper	Hedwig „Hessie“	1916	1996	U.S.A.	* FS	2
Kerschner	Theodor	1885	1971	Austria	LM	2
Kessner	Vince	?	?	Australia	FS	2

Table 1: continued

Family name	Surname(s)	Byr	Dyr	State	Relationship	n
Klemm	Walter	1898	1981	Austria	* LM EM FS	3
Kofler	Alois	1932	?	Austria	* LM	1
Kovács	Gyula	1932	1996	Hungary	* ex CF	1
Kühnelt	Wilhelm	1905	1988	Austria	* FS	1
Kuiper	Johannes [Hans] Gijsbertus Jacobus	1914	2011	Netherlands/France	* det. FS	1
Lindner	Gert	?	?	Germany	* FS	2
Luttenberger	Franz	1939	?	Austria	BZ	2
Mácha [Máchu]	Sylvestr	1913	2007	Czech Republic	* FS	2
Megerle [von Mühlfeld]	Johann	1765	1840	Austria	LM	3
Mienis	Hendrik [Henk] Klaas	1941	?	Netherlands/Israel	* FS	2
Mikula	Ernst	1900	1970	Austria	* FS	3
Morton	Friedrich	1890	1969	Austria	LM	1
Němec	Jaromir	?	?	Czech Republic	collector FS	2
Neuteboom	Wim Hendrik	1920	2000	Netherlands	* FS	1
Nordsieck	Hartmut	?	?	Germany	* det. FS	1
Nordsieck	Fritz	1906	1984	Germany	* det. FS	1
Oberwimmer	Alfred	1875	1930	Austria	* EM FS	1
Paget	Oliver Edgar	1922	2011	Austria	* det. EM FS	1
Pain	Thomas [Tom]	1915	2003	U.K.	* FS	1
Piechocki	Andrzej	?	?	Poland	* det. FS	1
Pilsbry	Henry Augustus	1862	1957	U.S.A.	* EM FS	1
Pinter	Laszlo Ernestus	1942	2002	Hungary	* FS CF	1
Plass	Jürgen	1962	?	Austria	BZ	2
Pleskot	Gertrude	?	?	Austria	CF	1
Rähle	Wolfgang	1939	?	Germany	* det. CF	2
Reichholf[-Riehm]	Josef & Helgard	?	?	Germany	* FS	2
Reischütz	Peter L.	?	?	Austria	* det. FS	1
Richnovszky	Andor	1932	1993	Hungary	* FS	1
Riedel	Adolf	1930	2010	Polen	* EM FS	1
Röckel	Dieter	1922	2015	Germany	* FS	1
Schaller	Karl-Heinz	?	?	Germany	* EM FS	1
Schedel	Josef	1856	1943	Austria	*LM EM FS	1
Scheerpeltz	Otto	1888	1975	Austria	* LM EM FS	1
Schileyko	Anatoly A.	1940	?	Russia	* det. FS	1
Schlesch	Hans Andreas	1891	1962	Denmark	* EM FS	1
Schlickum	Wilhelm Richard	1906	1979	Germany	* LM EM FS	2
Schröder	F.	?	?	Germany	* det. FS	1
Schuller	Josef	1899	1969	Austria	* EM FS	1
Schütt	Hartwig	1923	2009	Germany	* LM EM FS	1
Seidl	Fritz	1936	2001	Austria	* FS	4
Smits	Daan	1920	2011	Netherlands	* FS	2
Staid-Staadt	John L.	1886	1970	UK/France	* FS	1
Starmühlner	Ferdinand	1927	2006	Austria	* EM FS CF	2
Stojaspal	Franz	1946	2012	Austria/India	* FSCF	2
Stoliczka	Ferdinand	1838	1874	Austria	* EM FS	1
Stummer	Anton & Brunhilde	?	?	Austria	* FS CF BZ	3
Sturany	Rudolf	1867	1935	Austria	* LM EM FS	2
Subai	Peter	?	?	Germany	* det. FS	1
Suppantschitsch	Wolfgang	1943	2008	Austria	* CF	1
Thaler	Eduard	?	?	Austria	* LM FS	1
Tomlin	John Read le Brockton	1864	1954	UK	* EM FS	1
Tsuriel	Philip Shraga	?	1997	Israel	* FS	1
Uetz	Karl	1914	?	Austria	FS	1

Table 1: continued

Family name	Surname(s)	Byr	Dyr	State	Relationship	n
Verhaeghe	Rodolphe	1906	1989	Belgium	* FS	1
Vilella	Manuel	?	?	Spain	* det. FS	2
Visker	Derk A.	1915	2009	Netherlands	* FS	1
Wagner	Antoni [Anton] Józef	1860	1928	Austria	* LM EM FS	1
Wessely	Karl	1861	1946	Austria	LM	3
Weyrauch	Wolfgang Karl	1907	1970	Germany	* FS	2
Wiedemayr	Leonhard	1853	1912	Austria	* EM FS	1
Wieninger	Georg	1859	1925	Austria	* LM	1
Wiktor	Andrzej	1931	?	Poland	* FS	1
Zilch	Adolf Michael	1911	2006	Germany	* FS	1
Zimmermann	Stephan	1896	1980	Austria	* LM EM FS	3

exhibitions, donations and events related to the Upper Austrian Museum. Since 2006 it is incorporated in the "Culture Report Upper Austria" ("Kulturbericht Oberösterreich"). About 14 popular texts were written by us and Jan Steger since 1992: most concerning "animal of the month" (see reference chapter). More detailed as well as earlier (starting in 2001) posters are available at http://www.landesmuseum.at/de/standorte/biologiezentrum-linz/oekopark/pflanzen-tiere-oder-mineral-des-monats.html.

A kind of **grey zone** as regarding durability are internet activities such as personalised web pages of universities or single persons and digital archives. Nobody can assure that they are still accessible in few or even 50 years. This also applies to our database ZOBODAT (Zoological-Botanical Database), founded in 1972 as ZOODAT and taken over by the Federal State of Upper Austria in 1999. It is managed by our bioinformatics DI Michael MALICKY and provides material concerning natural history in 3 domains: Since 1972 biodiversity data (beyond 4 million data sets) of animals and plants including more than hundred thousand pictures, mainly from Austria. Since 2002 bibliographies of more than 18,000 natural history scientists including pictures and pdf files and since 2005 natural history literature concerning Upper Austria and since 2007 concerning Austria are digitised in the Biology Centre of the Upper Austrian Museum. Up to date more than 4,5 million pages of scientific literature (286,000 referenced scientific articles) have been digitised and read by OCR (Optical Character Recognition). Besides plotting traditional distribution maps, new goals include user friendly analysis (at present only in German language; cp. MALICKY et al. 2013) which enable rapid retrievals of information about certain geographical areas and site-specific conservation matters. Special user accounts provide a differentiated data protection. Pdfs can be found and downloaded without costs at this site. At present, only a portion of the data on invertebrate literature and taxa, viz. the original catalogue of Fritz Seidl, are included in ZOBODAT.

Some films (see page 605) and posters can also be considered as **semi-published**, because of their special purpose production for a restricted audience and non-durable accessibility. For instance, our poster series "animal/plant/mineral of the month" usually includes one print. Being undated in the beginning it can be found online in ZOBODAT from 2001 onward.

Unpublished material

Correspondance, lectures, routine paperwork (administrative efforts), notes, memos are stored in maps and/or hanging folders, bigger bundles in files. Nondurable posters are kept rolled up in cardboard boxes or framed. Original **card-index boxes** of scientists, for instance of Ernst Mikula (see page 648ff.) are kept aside to demonstrate the respective working style and also for historical reasons to evaluate the contemporary interests. Diploma and doctoral theses usually bear a six-digit alphanumerical signature and are categorised among the literature to be retrievable physically and/or virtually.

Specimens collected

As regards the **personalities involved in building the collection**, the senior author has to admit that without the long-standing, reliable cooperation of Agnes Bisenberger (about 10–20 hours per week), all the above-mentioned undoubtedly remarkable results and progress would have been impossible. Not only is she enthusiastic about molluscs, she also has a heart for other invertebrates (see BISENBERGER & FRIGERIO 2012) and from March 2013 (20 hours per week) participates in the placement work in the Biology Center. Bisenberger determined more than 2000 specimens and currently deposited more than 2000 specimens collected by herself.

Many members of the Upper Austrian Museum Association and other persons are recorded as collectors and donators of molluscs in the year-book of this society (JOOM). Unfortunately, the names of most of them have not been documented on the labels or in the inventory book. If the specimens are undetermined, the allocation to a series is almost impossible.

The list of identifiable collectors amounts to more than thousand, no biographic data could be found to most of them. The major collectors and better know malakologists related to them are given in bold in Table 1. It reveals a quite large network mainly within Austria and in Germany, as well as further European countries and as far as Japan, Morroco, Israel and Australia. The dimensions of exchange, donations and purchase are quite often not easy to be revealed (further details see page 657–663).

Our overview regards mainly **recent** molluscs, including some (sub)fossil samples largely collected by Christa Frank, for the current locations of deposit see page 597f.). The collection of **fossil** molluscs is located in another building of the OLML in another part of the city and curated by Björn Berning.

The **storage** of dry material by taxonomic classification is kept for six original store chests of Fritz Seidl (Fig. 33). Due to space restrictions, the "old" (viz. before 1992, i.e. the beginning of invertebrate curatorship) and later collections have to be integrated in the remaining six chests. As regards the wet samples, they are roughly systematically arranged in the cellar of the Biology Centre. The microscopic slides are deposited in the loft of the Biology Centre. The usual curatorial

Fig. 33, 34: Store chests in the 3nd floor of the depository Lindengasse: The first four in front are original ones of Fritz Seidl, which have been complemented by simplier ones (**33**). A special storage box (**34**) contains 290 compartments with 5419 lots, mainly from Josef Ganslmayr and Stephan Zimmermann.

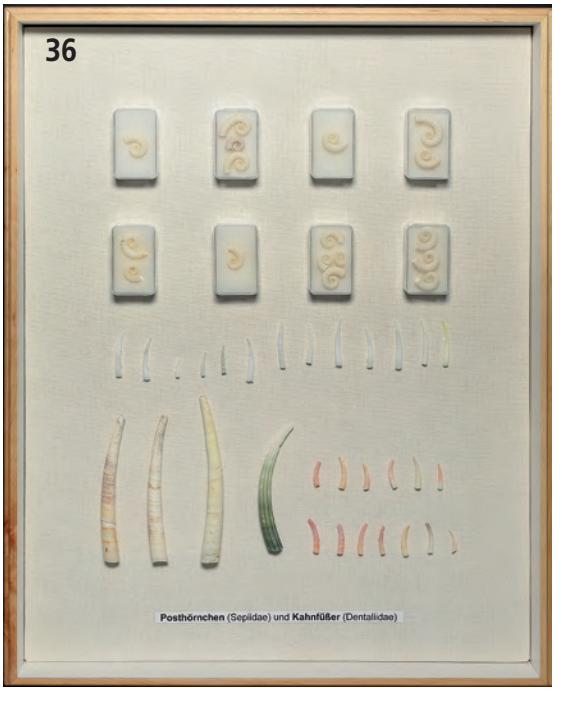


Fig. 35, 36: Members of the Polyplacophora (**35**), Cephalopoda and Scaphopoda (**36**) as presented in the exhibition "Myth Beauty. Facets of beauty in nature, art and society " in the Castle Museum Linz 2015/2016.

Table 2: Continents and countries represented in the Linz mollusc collection including the number of series (n).

Continents and countries	n
Africa	**3652**
Algeria	53
Angola	9
Benin	18
Botswana	8
Cameroon	48
Cape Verde	32
Chad	3
Congo	11
Congo (Democratic Republic of the)	32
Côte d'Ivoire	20
Egypt	204
Eritrea	6
Ethiopia	18
Gabon	4
Gambia	67
Ghana	26
Guinea	12
Kenya	215
Libyan Arab Jamahiriya	101
Madagascar	93
Malawi	2
Mauritania	8
Mauritius	479
Morocco	708
Mozambique	47
Namibia	39
Niger	8
Nigeria	15
Reunion	8
Rwanda	1
Saint Helena	1
Sao Tome and Principe	6
Senegal	145
Seychelles	95
Sierra Leone	126
Somalia	13
South Africa	176
Sudan	23
Tanzania (United Republic of)	170
Togo	142
Tunisia	434
Uganda	5
Zambia	16
Zanzibar	4
Zimbabwe	5
America	**6031**
Antigua and Barbuda	4
Argentina	89
Aruba	23
Bahamas	52
Barbados	2
Belize	2
Bermuda	4
Bolivia	8
Brazil	195
Canada	32
Cayman Islands	2
Chile	103
Colombia	23
Costa Rica	29
Cuba	678
Dominica	226
Dominican Republic	1101
Ecuador	54
French Guyana	1
Greenland	9
Grenada	30
Guadeloupe	189
Guam	2
Guatemala	7
Guyana	1
Haiti	13
Honduras	4
Jamaica	70
Martinique	168
Mexico	148
Montserrat	59
Netherland Antilles	38
Nicaragua	15
Panama	94
Paraguay	14
Peru	225
Puerto Rico	31
Saint Lucia	189
Saint Vincent and the Grenadines	71
Suriname	2
Trinidad and Tobago	56
United States of America	1815
Uruguay	81
Venezuela	72
Asia	**5030**
Afghanistan	2
Armenia	30
Azerbaijan	5
Bahrain	1
Burma	72
Cambodia	23
China	74
Hongkong	5
India	497
Indonesia	313
Iran	66
Iraq	26
Israel	275
Japan	567
Jordan	15
Kazakstan	2
Korea	3
Kuwait	1
Kyrgyzstan	3
Lao (People's Democratic Republic)	33
Lebanon	24
Malaysia	59
Maldives	134
Nepal	4
Occupied Palestinian Territory	26
Oman	20
Pakistan	1
Philippines	1328
Russian Federation	173
Singapore	141
Sri Lanka	324
Syrian Arab Republic	26
Taiwan	72
Tajikistan	2
Thailand	485
Timor-Leste	1
Turkmenistan	3
United Arab Emirates	101
Viet Nam	63
Yemen	21
Europe	**84717**
Albania	102
Andorra	2
Austria	51950
Belgium and Luxembourg	56
Bosnia and Herzegovina	375
Bulgaria	404
Croatia	3581
Cyprus	138
Czech Republic	597
Denmark	80
Estonia	3
Finland	4
France	774
Germany	8998
Gibraltar	92
Greece	4566
Hungary	1548
Iceland	8
Ireland	4
Italy	4160
Liechtenstein	79
Lithuania	14
Luxembourg	4
Macedonia (the former Yugoslav Rep. of)	186
Malta	178
Moldova, Rep.of	2
Monaco	11
Montenegro	543
Netherlands	252
Norway	78
Poland	311
Portugal	289
Romania	472
Serbia	74
Slovakia	624
Slovenia	823
Spain	1553
Sweden	49
Switzerland	479
Turkey	888
Ukraine	14
United Kingdom	352
Indopacific	**1425**
Australia	675
Fiji	70
French Polynesia	128
Marshall Islands	4
Micronesia (Federated States of)	13
New Caledonia	94
New Zealand	158
Palau	8
Papua New Guinea	159
Pitcairn	1
Samoa	26
Solomon Islands	51
Tonga	23
Vanuatu	15
Antarctica	25
French Southern Antartic territories	22
Georgia	15
total	**105482**

Table 3: Working classification of the superfamilies and families of four mollusc classes represented in the Linz collection including the number of genera (n).

Taxon	n	Taxon	n	Taxon	n	Taxon	n
Gastropoda	**1484**	**Cerithioidea**	**61**	Fissurellidae	11	Lottiidae	1
Acavoidea	**12**	Batillariidae	1	**Gastrodontoidea**	**12**	**Lymnaeoidea**	**20**
Acavidae	6	Cerithiidae	9	Archaeozonitidae	1	Ancylidae	1
Caryodidae	2	Melanopsidae	5	Euconulidae	6	Lymnaeidae	19
Dorcasiidae	2	Modulidae	1	Gastrodontidae	1	**Muricoidea**	**105**
Strophocheilidae	2	Pachychilidae	6	Oxychilidae	2	Coralliophilidae	6
Achatinelloidea	**5**	Paludomidae	2	Pristilomatidae	1	Costellariidae	1
Achatinellidae	4	Planaxidae	2	Trochomorphidae	1	Cystiscidae	1
Tornatellinidae	1	Pleuroceridae	6	**Haliotoidea**	**1**	Harpidae	1
Achatinoidea	**31**	Potamididae	8	Haliotidae	1	Marginellidae	9
Achatinidae	10	Thiaridae	14	Haminoeidae	2	Mitridae	9
Coeliaxidae	1	Turritellidae	7	Haminoeidae	2	**Muricidae**	**40**
Coelociidae	2	**Chilinoidea**	**2**	**Helicarionoidea**	**23**	Strepsiduridae	1
Ferussaciidae	7	Chilinidae	1	Ariophantidae	3	Thaididae	9
Subulinidae	11	Latiidae	1	Helicarionidae	18	Turbinellidae	3
Acroloxidoidea	**1**	**Clausilioidea**	**74**	Urocyclidae	2	Volutidae	25
Acroloxidae	1	Clausiliidae	74	**Helicinoidea**	**18**	**Naticoidea**	**10**
Acteonoidea	**4**	**Clinoidea**	**1**	Helicinidae	16	Naticidae	10
Acteonidae	3	Clionidae	1	Neritiliidae	1	**Neolepetopsoidea**	**1**
Aplustridae	1	**Cocculinoidea**	**1**	Proserpinidae	1	Neolepetopsidae	1
Akeroidea	**1**	Cocculinidae	1	**Helicoidea**	**233**	**Neomphaloidea**	**3**
Akeridae	1	**Cochlicopoidea**	**8**	Bradybaenidae	24	Neomphalidae	1
Amphiboloidea	**2**	Amastridae	2	Camaenidae	52	Peltospiridae	2
Amphibolidae	2	Cochlicopidae	6	Cepolidae	1	**Neritoidea**	**9**
Ampullaroidea	**10**	**Conoidea**	**18**	Cochlicellidae	1	Neritidae	9
Ampullariidae	10	Conidae	1	Elonidae	1	**Neritopsoidea**	**1**
Aplysioidea	**2**	Drilliidae	1	Epiphragmophoridae	1	Neritopsidae	1
Aplysiidae	2	Terebridae	3	Helicellidae	3	**Olivoidea**	**8**
Architectonicoidea	**4**	Turridae	13	Helicidae	84	Olividae	8
Architectonicidae	4	**Cyclophoroidea**	**48**	Helicodontidae	1	Orthalicoidea	71
Arionoidea	**6**	Aciculidae	9	Helminthoglyptidae	1	Bulimulidae	27
Arionidae	6	Cochlostomatidae	5	Hygromiidae	45	Cerionidae	2
Buccinoidea	**68**	Cyclophoridae	18	Polygyridae	8	Megaspiridae	22
Buccinidae	21	Maizaniidae	1	Thysanophoridae	2	Odontostomidae	6
Busyconidae	1	Neocyclotidae	8	Trissexodontidae	2	Orthalicidae	4
Columbellidae	15	Pupinidae	7	Xanthonychidae	7	Urocoptidae	10
Fasciolariidae	9	**Cypraeoidea**	**18**	**Hydrocenoidea**	**2**	**Parmacelloidea**	**5**
Melongenidae	5	Cypraeidae	7	Hydrocenidae	2	Milacidae	3
Nassariidae	15	Eratoidae	1	**Lepetodriloidea**	**1**	Parmacellidae	1
Pisaniidae	1	Ovulidae	10	Lepetodrilidae	1	Trigonochlamydidae	1
Pisidiidae	1	**Ellobioidea**	**17**	**Limacoidea**	**19**	**Partuloidea**	**1**
Bulimuloidea	**1**	Carychiidae	7	Agriolimacidae	2	Partulidae	1
Amphibulimulidae	1	Ellobiidae	10	Boettgerillidae	1	**Patelloidea**	**7**
Bulloidea	**2**	**Enoidea**	**21**	Limacidae	6	Patellidae	7
Bullidae	2	Enidae	21	Systrophiidae	2	**Philinoidea**	**4**
Calyptraeoidea	**6**	**Epitonioidea**	**9**	Vitrinidae	8	Cylichnidae	2
Calyptraeidae	6	Epitoniidae	8	**Littorinoidea**	**25**	Philinidae	1
Cancellarioidea	**4**	Janthinidae	1	Annulariidae	4	Retusidae	1
Cancellariidae	4	**Eulimoidea**	**5**	Littorinidae	9	**Planorboidea**	**34**
Capuloidea	**1**	Eulimidae	5	Pomatiasidae	6	Physidae	4
Capulidae	1	**Ficoidea**	**2**	Pomatiidae	6	Planorbidae	30
Cavolinoidea	**1**	Ficidae	2	**Lottioidea**	**2**	**Plectopyloidea**	**1**
Cavoliniidae	1	**Fissurelloidea**	**11**	Lepetidae	1	Sculptariidae	1

Table 3: Continued

Taxon	n
Pleurotomarioidea	**3**
Pleurotomariidae	3
Pseudolivoidea	**3**
Pseudolividae	3
Pterotracheoidea	**1**
Lacunidae	1
Punctoidea	**22**
Charopidae	6
Discidae	5
Endodontidae	3
Helicodiscidae	2
Oreohelicidae	1
Punctidae	5
Pupilloidea	**50**
Argnidae	2
Chondrinidae	11
Lauriidae	1
Orculidae	10
Pleurodiscidae	1
Pupillidae	7
Pyramidulidae	1
Strobilopsidae	2
Valloniidae	6
Vertiginidae	9
Pyramidelloidea	**6**
Amathinidae	1
Pyramidellidae	5
Rhytidoidea	**11**
Haplotrematidae	2
Paryphantidae	1
Plectopylididae	1
Rhytididae	5
Scolodontidae	2
Ringiculoidea	**1**
Ringiculidae	1
Rissooidea	**103**
Anabathridae	1
Assimineidae	4
Barleeidae	1
Bithyniidae	6
Caecidae	2
Hydrobiidae	58
Iravadiidae	2
Lithoglyphidae	1
Moitessieriidae	1
Pomatiopsidae	14
Rissoidae	7
Stenothyridae	2
Tornidae	1
Truncatellidae	3
Sagdoidea	**5**
Sagdidae	5
Siphonarioidea	**1**
Siphonariidae	1
Streptaxoidea	**13**
Streptaxidae	13
Stromboidea	**10**
Aporrhaidae	2
Strombidae	7
Struthiolariidae	1
Strophocheiloidea	**3**
Megalobulimidae	3
Succinoidea	**7**
Succineidae	7
Testacelloidea	**7**
Oleacinidae	3
Spiraxidae	3
Testacellidae	1
Tonnoidea	**32**
Bursidae	4
Cassidae	3
Cymatiidae	11
Personidae	1
Ranellidae	5
Tonnidae	8
Trimusculoidea	**1**
Trimusculidae	1
Triphoroidea	**2**
Cerithiopsidae	1
Triphoridae	1
Trochoidea	**29**
Angariidae	1
Skeneidae	2
Stomatellidae	2
Trochidae	24
Truncatelloidea	**2**
Vitrinellidae	2
Turbinelloidea	**2**
Columbariidae	1
Vasidae	1
Turbinoidea	**16**
Phasianellidae	2
Turbinidae	14
Umbraculoidea	**1**
Umbraculidae	1
Valvatoidea	**4**
Valvatidae	4
Vanikoroidea	**7**
Hipponicidae	3
Triviidae	3
Vanikoridae	1
Velutinoidea	**1**
Lamellariidae	1
Vermetoidea	**6**
Vermetidae	6
Veronicelloidea	**4**
Veronicellidae	4
Vitrinoidea	**1**
Daudebardiidae	1
Viviparoidea	**22**
Chondropomidae	9
Viviparidae	13
Xenophoroidea	**3**
Xenophoridae	3
Zonitoidea	**30**
Zonitidae	30
Polyplacophora	**10**
0	1
Hanleyidae	1
Chitonoidea	**6**
Chaetopleuridae	1
Chitonidae	2
Ischnochitonidae	3
Cryptoplacoidea	**2**
Acanthochitonidae	2
Mopalioidea	**1**
Mopaliidae	1
Scaphopoda	**3**
0	3
Dentaliidae	3
Bivalvia	**371**
Anomioidea	**4**
Anomiidae	3
Placunidae	1
Arcoidea	**15**
Arcidae	10
Cucullaeidae	1
Glycymerididae	3
Noetiidae	1
Arcticoidea	**3**
Arcticidae	2
Astartidae	1
Caleommatoidea	**2**
Montacutidae	2
Cardioidea	**27**
Cardiidae	25
Tridacnidae	2
Chamoidea	**3**
Chamidae	3
Clavagelloidea	**1**
Clavagellidae	1
Corbiculoidea	**6**
Corbiculidae	6
Crassatelloidea	**5**
Carditidae	4
Crassatellidae	1
Cuspidarioidea	**1**
Cuspidariidae	1
Dreissenoidea	**3**
Dreissenidae	3
Etherioidea	**8**
Etheriidae	2
Iridinidae	1
Mutelidae	3
Mycetopodidae	2
Galeommatoidea	**2**
Leptonidae	2
Gastrochaenoidea	**2**
Gastrochaenidae	2
Glossoidea	**2**
Glossidae	2
Hiatelloidea	**3**
Hiatellidae	3
Hyrioidea	**4**
Hyriidae	4
Limoidea	**3**
Limidae	3
Limopsoidea	**2**
Isognomidae	1
Limopsidae	1
Lucinoidea	**12**
Fimbriidae	1
Lucinidae	11
Mactroidea	**14**
Mactridae	11
Mesodesmatidae	3
Myochamoidea	**1**
Cleidothaeridae	1
Myoidea	**7**
Corbulidae	5
Myidae	2
Mytiloidea	**20**
Mytilidae	20
Nuculanoidea	**2**
Nuculanidae	1
Nuculidae	1
Ostreoidea	**8**
Gryphaeidae	2
Ostreidae	6
Pandoroidea	**2**
Myochamidae	1
Pandoridae	1
Pectinoidea	**26**
Pectinidae	25
Spondylidae	1
Pholadoidea	**10**
Pholadidae	8
Teredinidae	2
Pinnoidea	**3**
Pinnidae	3
Pterioidea	**6**
Pteriidae	6

Table 3: Continued

Taxon	n	Taxon	n	Taxon	n	Taxon	n
Solemyoidea	**1**	Solecurtidae	2	**Ungulinoidea**	**2**	Sepiidae	1
Solemyidae	1	Tellinidae	13	Ungulinidae	2	Sepiolidae	1
Solenoidea	**7**	**Thracioidea**	**3**	**Unionoidea**	**68**	Spirulidae	1
Pharidae	4	Laternulidae	2	Margaritiferidae	1	**Argonautoidea**	**1**
Solenidae	3	Thraciidae	1	Unionidae	67	Argonautidae	1
Sphaerioidea	**5**	**Thyasiroidea**	**1**	**Veneroidea**	**46**	**Conoidea**	**1**
Sphaeriidae	5	Thyasiridae	1	Paphiidae	3	Loliginidae	1
Tellinoidea	**29**	**Trapezioidea**	**1**	Petricolidae	2	**Nautiloidea**	**1**
Donacidae	3	Trapeziidae	1	Veneridae	41	Nautilidae	1
Psammobiidae	7	**Trigonioidea**	**1**	**Cephalopoda**	**7**	**Octopodoidea**	**1**
Semelidae	4	Trigoniidae	1	0	3	Octopodidae	1

practice to store name-bearers preferably separately from general collections (vouchers) is not followed at present, because of the uncertain status of numerous types and most of them are situated in the original chests of Fritz Seidl.

The **first dated voucher** bears the year 1809, the second 1812, beginning with 1850 larger series (in total 720) refer to the second half of the 19th century. However, a huge amount of undated specimens very likely have been collected in the 19th century (at least 3000) or even the 18th century (see page pxy).

The **biogeographic coverage** of the collection – of course to varying degree – is nearly worldwide (Tab. 2). 192 countries and/or „states" are represented, where mainly gastropods and to a lesser extent bivalves have been collected. This was the case for more than 40 countries in Europe, the American, Asian and African continent, respectively. In the Pacific region 14 countries were encountered.

The European countries expectedly revealed 80 % of the series. Nearly 52,000 of them have been collected in Austria. According to the percentage of series the nine federal states of Austria are ranked as follows: Lower Austria (37.9 %), Upper Austria (34.0), Styria (8.4), Carinthia (4.9), Salzburg (4.9), Vienna (3.4) Tyrol (3.2), Burgenland (2.5), and Vorarlberg (0.7). The next quite well covered country is Germany with almost 9000 series, followed by the mediterranean countries Greece, Italy and Croatia with less than 5000 but more than 3500 series.

On the American continent, the United States of America and the Dominican Republic are represented by more than 1000 series. The latter also applies to the Philippines in Asia. From hundred to nearly 800 series have been collected in 11 African countries, namely Morocco, Mauritius, Tunisia, Kenya, Egypt, South Africa, Tanzania, Senegal, Togo, Sierra Leone and Libya. In the Pacific region half of the series is from Australia

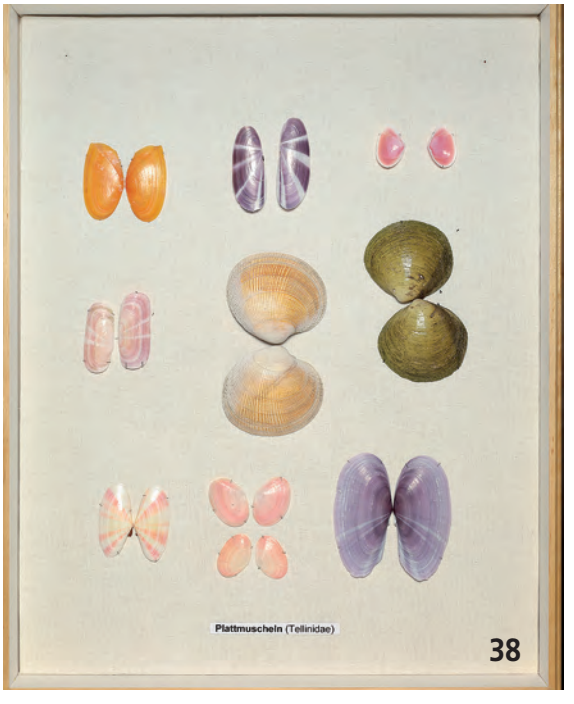


Fig. 37, 38: Members of the bivalve families Veneridae (**37**) and Tellinidae (**38**) as presented in the exhibition "Myth Beauty. Facets of beauty in nature, art and society" in the Castle Museum Linz 2015/2016.

Table 4: Working classification of the families and genera (sorted alphabetically) represented in the Linz collection.

Acanthochitonidae	Amphibulimulidae	Arctica	Monachoides
Acanthochitona	Amphibulima	Cyprina	Neochloritis
Cryptochiton	Ampullariidae	Argnidae	Nesiohelix
Acavidae	Afropomus	Agardhiella	Phaeohelix
Acavus	Ampullaria	Argna	Phengus
Ampelita	Asolene	Argonautidae	Phoenicobius
Clavator	Ceratodes	Argonauta	Plectotropis
Helicophana	Ceratopoma	Arionidae	Pseudiberus
Oligospira	Gonatorhaphe	Carinarion	Buccinidae
Stylodon	Lanistes	Kobeltia	Ancistrolepis
Achatinellidae	Marisa	Lachea	Austrofusus
Achatinella	Pila	Letourneuxia	Babylonia
Auriculella	Pomacea	Mesarion	Buccinum
Newcombia	Anabathridae	Microarion	Burnupena
Partulina	Nodulus	Ariophantidae	Cantharus
Achatinidae	Ancylidae	Asperitas	Chauvetia
Achatina	Pygrophorus	Elaphroconcha	Clea
Archachatina	Angariidae	Xestina	Colubraria
Atopocochlis	Angaria	Assimineidae	Colus
Beckianum	Annulariidae	Assiminea	Cominella
Burtoa	Annularia	Cyclotropis	Epidromus
Columna	Choanopoma	Omphalotropis	Euthria
Leucotaenius	Cistulops	Paludinella	Japelion
Lignus	Colobostylus	Astartidae	Neptunea
Metachatina	Anomiidae	Astarte	Northia
Pseudachatina	Anomia	Barleeidae	Penion
Aciculidae	Enigmonia	Caelatura	Phos
Acicula	Monia	Batillariidae	Pisania
Acmaea	Aplustridae	Rhinocoryne	Pisinia
Lottia	Hydatina	Bithyniidae	Volutharpa
Patelloida	Aplysiidae	Bithynia	Bulimulidae
Platyla	Aplysia	Gabbia	Auris
Pleuracme	Dolabella	Hydrobioides	Bostryx
Pupoides	Aporrhaidae	Napaeopsis	Bothriembryon
Renea	Aporrhais	Napaeus	Bulimus
Scurria	Chenopus	Wattebledia	Cochlorina
Acroloxidae	Archaeozonitidae	Boettgerillidae	Drymaeus
Acroloxus	Omphalosagda	Boettgerilla	Dryptus
Acteonidae	Architectonicidae	Bradybaenidae	Eudolichotis
Acteon	Architectonica	Acusta	Geoceras
Rictaxis	Heliacus	Aegista	Geopyrgus
Tornatella	Philippia	Bradybaena	Liguus
Agriolimacidae	Solarium	Calocochlia	Naesiotus
Agriolimax	Arcidae	Canistrum	Neopetraeus
Deroceras	Anadara	Cathaica	Orthalicus
Akeridae	Arca	Chlorea	Otostomus
Akera	Barbatia	Chrysallis	Oxychona
Amastridae	Cyclas	Cochlostyla	Peruinellus
Amastra	Scapharca	Dolicheulota	Phenacotaxus
Carelia	Scaphula	Eedura	Placostylus
Amathinidae	Senilia	Euhadra	Plectostylus
Amathina	Striarca	Eulota	Plekocheilus
Amphibolidae	Tetrarca	Fruticicola	Rabdotus
Amphibola	Trisidos	Helicostyla	Scutalus
Salinator	Arcticidae	Laeocathaica	Sultana

Table 4: continued

Thaumastus	Plectorhagada	Beguina	Chiton
Vermiculatus	Pleurodonte	Cardites	Chondrinidae
Xenothauma	Pleuroxia	Glans	Abida
Bullidae	Polydontes	Mytilicardia	Chondrina
Bulla	Polygyratia	Carychiidae	Condrula
Bullaria	Promonturconchum	Alexia	Fauxulus
Bursidae	Prototrachia	Auriculinella	Granaria
Aspa	Pupuina	Carychium	Granopupa
Bufonaria	Quistrachia	Myosotella	Gyliotrachela
Bursa	Rhagada	Ovatella	Heliomanes
Tutufa	Satsuma	Zootecus	Rupestrella
Busyconidae	Semotrachia	Zospeum	Sandahlia
Syrinx	Sinumelon	Caryodidae	Torquilla
Caecidae	Solaropsis	Caryodes	Chondropomidae
Caecum	Strepsitaurus	Pedinogyra	Adamsiella
Micranellum	Thersites	Cassidae	Chondropoma
Calyptraeidae	Trachia	Cassis	Chondrothyra
Calyptraea	Turgenitubulus	Cypraecassis	Chondrothyrella
Cheilea	Varohadra	Semicassis	Chondrothyretes
Crepidula	Xanthomelon	Cavoliniidae	Licina
Crucibulum	Zachrysia	Cavolinia	Parachondria
Maoricrypta	Cancellariidae	Cepolidae	Torrella
Sigapatella	Cancellaria	Cysticopsis	Tudora
Camaenidae	Gonostoma	Cerionidae	Clausiliidae
Amphidromus	Scalptia	Cerion	Acrotoma
Amplirhagada	Trigonostoma	Floreziellus	Agathylla
Angasella	Capulidae	Cerithiidae	Albanodelima
Bentosites	Capulus	Bittium	Albinaria
Camaena	Cardiidae	Campanile	Alinda
Carinotrachia	Acanthocardia	Cerithium	Alopia
Chloritis	Americardia	Clypeomorus	Balea
Coniglobus	Cadakia	Gourmya	Barcania
Cristilabrum	Cardium	Liocerithium	Boettgeria
Crystallopsis	Cerastoderma	Pseudovertagus	Bulgarica
Cupedora	Clinocardium	Rhinoclavis	Carinigera
Damochlora	Corculum	Vulgocerithium	Caspiophaedusa
Eurycratera	Dinocardium	Cerithiopsidae	Charpentieria
Falspleuroxia	Discors	Cerithiopsis	Clausilia
Ganesella	Forcatia	Chaetopleuridae	Cochlodina
Glyptorhagada	Fragum	Chaetopleura	Columbinia
Granulomelon	Hominoea	Chamidae	Delima
Hadra	Laevicardium	Arcinella	Dilataria
Labyrinthus	Lunulicardia	Chama	Ehrmanniella
Lampadion	Lyrocardium	Pseudochama	Elia
Landouria	Nemocardium	Charopidae	Erjavecia
Luchuhadra	Papyridea	Allodiscus	Filosa
Mandarina	Parvicardium	Charopa	Fusulus
Mesanella	Plagiocardium	Gerontia	Garnieria
Montanomelon	Ringicardium	Monomphalus	Graciliaria
Mouldingia	Rudicardium	Ptychodon	Gracilinenia
Ningbingia	Serripes	Trachycystis	Hemicena
Obba	Sphaerocardium	Chilinidae	Herilla
Ordtrachia	Trachycardium	Chilina	Idyla
Papuina	Vasticardium	Chitonidae	Iphigena
Planispira	Carditidae	Acanthopleura	Isabelaria

Table 4: continued

Isabellaria	Chochlicopa	Lentidium	Dentaliidae
Itala	Cionella	Costellariidae	Antalis
Julica	Cochlicopa	Pusia	Dentalium
Kusceria	Hypnophila	Crassatellidae	Pictodentalium
Laciniaria	Zua	Eucrassatella	Discidae
Lampedusa	Cochlostomatidae	Cucullaeidae	Anguispira
Leucostigma	Auritus	Cucullaea	Discus
Macedonica	Cochlostoma	Cuspidariidae	Goniodiscus
Macrogastra	Craspedopoma	Cuspidaria	Pararhytida
Marpessa	Diplommatina	Cyclophoridae	Patula
Medora	Palaina	Alycaeus	Donacidae
Mentissella	Coeliaxidae	Aulopoma	Donax
Micropontica	Coeliaxis	Caspicyclotus	Galatea
Mirus	Coelociidae	Chamalycaeus	Hecuba
Montenegrina	Coelocion	Chondrocyclus	Dorcasiidae
Muticaria	Prosopeas	Cyclophorus	Dorcasia
Neostyriaca	Columbariidae	Cyclotus	Trigonephrus
Paganizaptyx	Columbarium	Inciostuma	Dreissenidae
Papillifera	Columbellidae	Lagocheilus	Congeria
Peruinia	Amphissa	Leptopoma	Dreissena
Pfeifferiella	Anachis	Leptopomoides	Mytilopsis
Phaedusa	Columbella	Leucoptychia	Drilliidae
Pirostoma	Conella	Neocyclotus	Neodrillia
Pseudalinda	Falsipyrgula	Pholeoteras	Ellobiidae
Pseudofusulus	Ginaia	Pterocyclos	Auricula
Pseudonenia	Mitrella	Rhiostoma	Cassidula
Pupillifera	Nitidella	Spirostoma	Ellobium
Pyrostoma	Parametaria	Toffoletia	Laemodonta
Ruthenica	Pseudanachis	Cylichnidae	Leucophytia
Serbica	Pyrene	Cylichna	Marinula
Sericata	Pyreneola	Scaphander	Melampus
Serrulina	Pyrgohydrobia	Cymatiidae	Pedipes
Siciliaria	Strombina	Argobuccinum	Pythia
Strepdoera	Xestopyrgula	Biplex	Tralia
Strigilecula	Conidae	Cabestana	Elonidae
Strumosa	Conus	Charonia	Tropidomphalus
Temesa	Coralliophilidae	Cymatium	Endodontidae
Triloba	Coralliobia	Distorsio	Libera
Triptychia	Coralliophila	Lampusia	Nesophila
Tropidauchenia	Latiaxis	Ranella	Zilchogyra
Vestia	Magilus	Ranularia	Enidae
Zaptychopsis	Quoyula	Triton	Buliminus
Zaptyx	Rapa	Tritonium	Chondrula
Clavagellidae	Corbiculidae	Cypraeidae	Chondrulopsina
Clavagella	Batissa	Cypraea	Chondrus
Cleidothaeridae	Corbicula	Cypraeovula	Ena
Cleidothaerus	Corbiculina	Cyprea	Euchondrus
Clionidae	Cyanocyclas	Erronea	Imparietula
Clione	Cyrenella	Luria	Jaminia
Cocculinidae	Polymesoda	Monetaria	Mabilliella
Cocculina	Corbulidae	Zonaria	Mastus
Cochlicellidae	Aloidis	Cystiscidae	Merdigera
Monilearia	Corbula	Persicula	Pachnodus
Cochlicopidae	Erodona	Daudebardiidae	Paramastus
Azeca	Erosaria	Daudebardia	Pene

Table 4: continued

Pseudochondrula	Ficus	Macrochlamys	Isaurica
Pseudonapaeus	Sycotypus	Naninia	Isognomostoma
Spelaeoconcha	Fimbriidae	Pachystyla	Kosicia
Subzebrinus	Fimbria	Quantula	Lampadia
Turanena	Fissurellidae	Ryssota	Leptaxis
Yakuena	Amblychilepas	Sasakina	Leucochroa
Zebrina	Clypidina	Sophina	Levantina
Epiphragmophoridae	Dendrofissurella	Helicellidae	Liburnica
Angrandiella	Diodora	Jacosta	Lindholmia
Epitoniidae	Emarginula	Xeropicta	Lindholmiola
Amaea	Fissurella	Xerosecta	Macularia
Cirsotrema	Fissurellidea	Helicidae	Marmorana
Epitonium	Hemitoma	Actinella	Mastigophallus
Megalostoma	Lucapina	Alabastrina	Metafruticicola
Opalia	Megathura	Allognathus	Microxeromagna
Protancylus	Scutus	Ambigua	Murella
Scala	Gastrochaenidae	Archelix	Ochthephila
Scalaria	Eufistulana	Arianta	Oestophora
Eratoidae	Gastrochaena	Assyriella	Opica
Erato	Gastrodontidae	Campylaea	Otala
Etheriidae	Zonitoides	Campylaeopsis	Pseudocampylaea
Bartlettia	Glossidae	Canariella	Pseudotachea
Etheria	Glossus	Cantareus	Pseudoxerophila
Euconulidae	Isocardia	Caseolus	Rossmaessleria
Econulus	Glycymerididae	Cattania	Semifruticicola
Euconulus	Glycymeris	Caucasotachea	Soosia
Guppya	Pectunculus	Causa	Sphincterochila
Habroconus	Tucetona	Cepaea	Steenbergia
Luchuconulus	Gryphaeidae	Chilostoma	Tachea
Plegma	Hyotissa	Cingulifera	Tacheocampylaea
Eulimidae	Neopycnodonte	Codringtonia	Tacheopsis
Balcis	Haliotidae	Cornu	Theba
Eulima	Haliotis	Cressa	Thiessea
Melanella	Haminoeidae	Cryptomphalus	Tingitana
Niso	Atys	Cylindrus	Triodopsis
Ophicardelus	Haminoea	Dinarica	Trochulus
Fasciolariidae	Hanleyidae	Discula	Vidovicia
Cyrtulus	Hanleya	Dobracia	Wladislawia
Fasciolaria	Haplotrematidae	Dupotetia	Xeromagna
Fusinus	Haplotrema	Elona	Xerophila
Fusus	Hedleyella	Eobania	Xeroplexa
Latirus	Harpidae	Eremina	Helicinidae
Leucozonia	Harpa	Eubania	Alcadia
Opeatostoma	Helicarionidae	Euparypha	Apanoconia
Peristernia	Ariophanta	Faustina	Emoda
Pleuroploca	Bekkochlamys	Fruticocampylaea	Eutrochatella
Ferussaciidae	Cryptozona	Geomitra	Geophorus
Amphorella	Ctenophila	Helicigona	Helicina
Caecilioides	Dendrotrochus	Helix	Hendersonia
Calaxis	Erepta	Hemicycla	Lucidella
Cecilioides	Helicarion	Hessea	Pleuropomatia
Ferussacia	Hemiplecta	Hesseola	Priotrochatella
Geostilbia	Kalidos	Heterostoma	Pseudocaelatura
Hohenwartiana	Liardetia	Iberellus	Semitrochatella
Ficidae	Louisia	Iberus	Troschelviana

Table 4: continued

Ustronia	Opacuincola	Plebecula	Lehmannia
Viana	Orientalia	Plicuteria	Limacus
Waldemaria	Paladilhiopsis	Pseudotrichia	Limax
Helicodiscidae	Pauluccinella	Pyrenaearia	Malacolimax
Lucilla	Peringia	Trissexodon	Limidae
Radiodiscus	Plagiogeyeria	Trochoidea	Acesta
Helicodontidae	Potamolithus	Urticicola	Lima
Helicodonta	Potamopyrgus	Xerocampylaea	Limaria
Helminthoglyptidae	Pristinicola	Xerocerastus	Limopsidae
Helminthoglypta	Pseudamnicola	Xerocincta	Limopsis
Hiatellidae	Pseudohoratia	Xerocrassa	Lithoglyphidae
Hiatella	Pyrgophorus	Xerolenta	Lithoglyphus
Panopea	Pyrgula	Xeromunda	Littorinidae
Saxicava	Pyrgulopsis	Xeroptycha	Bembicium
Hipponicidae	Rehderiella	Xerotricha	Echinius
Amalthea	Sadleriana	Zenobiella	Laevilittorina
Antisabia	Saxurinator	Hyriidae	Littorina
Hipponix	Semisalsa	Alathyria	Littorinopsis
Hydrobiidae	Siligenium	Diplodon	Melarhaphe
Adriohydrobia	Taia	Hyridella	Nodilittorina
Alzoniella	Trochidrobia	Triplodon	Peasiella
Amnicola	Ventrosia	Iravadiidae	Tectarius
Avenionia	Hydrocenidae	Fairbankia	Loliginidae
Belgrandia	Georissa	Iravadia	Loligo
Belgrandiella	Hydrocena	Iridinidae	Lottiidae
Birgella	Hygromiidae	Iridina	Collisella
Bythinella	Ashfordia	Ischnochitonidae	Lucinidae
Bythiospeum	Candidula	Ischnochiton	Codakia
Cincinnatia	Caucasigena	Lepidochitona	Ctena
Clenchiella	Cernuella	Tonicella	Divaricella
Clessiniola	Chilanodon	Isognomidae	Lentillaria
Ecrobia	Chilotrema	Malleus	Linga
Emmericia	Ciliella	Janthinidae	Loripes
Fluminicola	Circassina	Janthina	Lucina
Fonscochlea	Cochlicella	Lacunidae	Lucinella
Geyeria	Dibothrion	Lacuna	Lucinoma
Graziana	Disculella	Lamellariidae	Myrtea
Hadziella	Drepanostoma	Velutina	Phacoides
Hauffenia	Edentiella	Laternulidae	Lymnaeidae
Heleobia	Edentulina	Brechites	Acella
Horatia	Euomphalia	Laternula	Amerianna
Hydrobia	Filicinella	Latiidae	Catascopia
Iglica	Ganula	Latia	Fossaria
Lanzaia	Harmozica	Lauriidae	Frauenfeldia
Limicolaria	Helicella	Lauria	Galba
Lithoglyphoides	Helicopsis	Lepetidae	Isodora
Lithoglyphopsis	Hiltrudia	Lepeta	Leptolymnaea
Littoridina	Hygromia	Lepetodrilidae	Limnaea
Marstoniopsis	Kalitinaia	Lepetodrilus	Limnophysa
Mercuria	Leucochroopsis	Leptonidae	Lymnaea
Microna	Metatheba	Bornia	Modicella
Microsalpinx	Monacha	Pallium	Myxas
Notogillia	Oscarboettgeria	Limacidae	Neritostoma
Ohridohoratia	Perforatella	Arion	Omphiscola
Oncomelania	Petasina	Bielzia	Pseudosuccinea

Table 4: continued

Radix	Zilchiella	Muricopsis	Mytilus
Stagnicola	Melanopsidae	Neorapana	Perna
Terebralia	Esperiana	Nucella	Septifer
Mactridae	Fagotia	Ocenebra	Stavelia
Eastonia	Holandriana	Ocinebra	Nassariidae
Lutraria	Melanopsis	Ocinebrina	Amycla
Mactra	Microcolpia	Phyllonotus	Amyclina
Mactrellona	Melongenidae	Poropteron	Arcularia
Meropesta	Busycon	Pterinotus	Bullia
Mulinia	Hemifusus	Pterochelus	Cyclonassa
Raetellops	Melongena	Pteropurpura	Cyclope
Rangia	Pugilina	Pterynotus	Cyllene
Resania	Volema	Purpura	Demoulia
Spisula	Mesodesmatidae	Purpurellus	Desmoulia
Tresus	Atactodea	Ricinula	Hinia
Maizaniidae	Donacilla	Siratus	Ilyanassa
Maizania	Mesodesma	Stramonita	Nassa
Margaritiferidae	Milacidae	Thais	Nassarius
Margaritifera	Aspidoporus	Trachypollia	Neritula
Marginellidae	Milax	Tritonalia	Sphaeronassa
Bullata	Tandonia	Trochia	Naticidae
Cypraeolina	Mitridae	Trophon	Eunaticina
Egouena	Cancilla	Trunculariopsis	Globularia
Gibberula	Imbricaria	Typhis	Lunatia
Glabella	Mitra	Urosalpinx	Natica
Marginella	Neocancilla	Vitularia	Naticarius
Mesoginella	Pterygia	Mutelidae	Neverita
Prunum	Scabricola	Aspatharia	Payraudeautia
Volvarina	Sinistralia	Mutela	Polinices
Megalobulimidae	Strigatella	Spatha	Sinum
Anthinus	Vexillum	Mycetopodidae	Stigmaulax
Gonyostomus	Modulidae	Leila	Nautilidae
Megalobulimus	Modulus	Mycetopoda	Nautilus
Megaspiridae	Moitessieriidae	Myidae	Neocyclotidae
Acrophaedusa	Moitessiera	Cryptomya	Amphicyclotulus
Andinia	Montacutidae	Mya	Aperostoma
Cylindrophaedusa	Montacuta	Myochamidae	Austrocyclotus
Euphaedusa	Tellimya	Myadora	Farcimen
Formosana	Mopaliidae	Mytilidae	Megalomastoma
Hemiphaedusa	Plaxiphora	Amygdalum	Necopupina
Liparophaedusa	Muricidae	Aulacomya	Ostodes
Luchuphaedusa	Acanthina	Bathymodiolus	Pupina
Megalophaedusa	Bolinus	Botula	Neolepetopsidae
Megaspira	Calotrophon	Brachidontes	Eulepedopsis
Mesophaedusa	Ceratostoma	Choromytilus	Neomphalidae
Mundiphaedusa	Chicoreus	Crenella	Cyathermia
Nenia	Cuma	Gregariella	Neritidae
Nesiophaedusa	Favartia	Ischadium	Clithon
Paraphaedusa	Haustellotyphis	Limnoperna	Clypeolum
Pontophaedusa	Haustellum	Lithophaga	Nerita
Reinia	Hexaplex	Modiolarca	Neritina
Steeriana	Homalocantha	Modiolus	Neritodryas
Stereophaedusa	Murex	Musculus	Puperita
Tryannophaedusa	Muricanthus	Mytella	Septaria
Ventriphaedusa	Muricidea	Mytilaster	Smaragdina

Table 4: continued

Theodoxus	Ostrea	Crassadoma	Engina
Neritiliidae	Pretostrea	Cryptopecten	Pisidiidae
Neritilia	Saccostrea	Decatopecten	Calyculina
Neritopsidae	Ovulidae	Equichlamys	Placunidae
Neritopsis	Amphiperas	Hinnites	Placuna
Noetiidae	Calpurnus	Lissopecten	Planaxidae
Noetia	Cyphoma	Lyropecten	Planaxis
Nuculanidae	Diminovula	Manupecten	Supplanaxis
Nuculana	Jenneria	Nodipecten	Planorbidae
Nuculidae	Ovula	Pecten	Ancylus
Nucula	Phenacovolva	Pedum	Anisus
Octopodidae	Pseudocyphoma	Placopecten	Armiger
Octopus	Pseudosimnia	Plicatula	Australorbis
Odontostomidae	Volva	Proteopecten	Bathyomphalus
Anctus	Oxychilidae	Protopecten	Biomphalaria
Anostoma	Mediterranea	Semipallium	Bulinus
Clessinia	Perpolita	Swiftopecten	Carinifex
Cyclodontia	Pachychilidae	Volachlamys	Coretus
Plagiodontes	Adamietta	Peltospiridae	Cyraulus
Scalarinella	Brotia	Nodopelta	Drepanotrema
Oleacinidae	Melanatria	Rhynchopelta	Gundlachia
Glandina	Pachychilus	Personidae	Gyraulus
Oleacina	Paracrostoma	Distortrix	Helisoma
Poiretia	Potadoma	Petricolidae	Hippeutis
Olividae	Paludomidae	Petricola	Indoplanorbis
Agaronia	Stanleya	Rupellaria	Isidora
Amalda	Tanganyicia	Pharidae	Lenameria
Ancilla	Pandoridae	Orbicularia	Menetus
Anolacia	Pandora	Pharella	Paraspira
Eburna	Paphiidae	Pharus	Physastra
Oliva	Paphia	Siliqua	Planorbarius
Olivancillaria	Tapes	Phasianellidae	Planorbella
Olivella	Venerupis	Phasianella	Planorbis
Orculidae	Parmacellidae	Tricolia	Planorbula
Chilopyrgula	Parmacella	Philinidae	Polypylis
Euxina	Partulidae	Philine	Promenetus
Odontocyclas	Partula	Pholadidae	Segmentina
Orcula	Paryphantidae	Barnea	Taphius
Orculella	Paryphanta	Cyrtopleura	Trochorbis
Pagodulina	Patellidae	Jouannetia	Plectopylididae
Pilorcula	Ansates	Martesia	Plectopylis
Schileykula	Cellana	Penitella	Pleuroceridae
Sphyradium	Helcion	Pholas	Anculosa
Walklea	Nacella	Talona	Doryssa
Oreohelicidae	Patella	Zirfaea	Goniobasis
Oreohelix	Patina	Physidae	Lithasia
Orthalicidae	Scutellastra	Aplexa	Pleurocera
Aspastus	Pectinidae	Nauta	Semisulcospira
Corona	Aequipecten	Physa	Pleurodiscidae
Porphyrobaphe	Amusium	Physella	Pleurodiscus
Spixia	Annachlamys	Pinnidae	Pleurotomariidae
Ostreidae	Argopecten	Atrina	Mikadotrochus
Alectryonella	Bractechlamys	Pinna	Perotrochus
Crassostrea	Chlamys	Streptopinna	Pleurotomaria
Lopha	Comptopallium	Pisaniidae	Polygyridae

Table 4: continued

Allogona	Sanguinolaria	Ougapia	Rhodea
Daedalochila	Solecurtus	Rhytida	Spiraxis
Mesodon	Soletellina	Strangesta	Spirulidae
Patera	Pseudolividae	Ringiculidae	Spirula
Polygyra	Macron	Ringicula	Spondylidae
Praticolella	Pseudoliva	Rissoidae	Spondylus
Stenotrema	Triumphis	Alvania	Stenothyridae
Vespericola	Pteriidae	Cingula	Gangetia
Pomatiasidae	Avicula	Rissoa	Stenothyra
Cyclostoma	Isognomon	Rissoina	Stomatellidae
Cyclotopsis	Meleagrina	Turboella	Stomatella
Ericia	Pinctada	Zebina	Stomatia
Pomatias	Pteria	Zippora	Strepsiduridae
Tropidophora	Vulsella	Sagdidae	Melapium
Tudorella	Punctidae	Aquebana	Streptaxidae
Pomatiidae	Helicodiscus	Exsuavitas	Ennea
Abbotella	Paralaoma	Lacteoluna	Eustreptaxis
Diplopoma	Pleuropunctum	Sagda	Gibbulinella
Eutudora	Punctum	Zaphysema	Gibbus
Leonia	Toltecia	Scolodontidae	Gonaxis
Ligatella	Pupillidae	Happiella	Gonidomus
Rhytidopoma	Gastrocopta	Microhappia	Gonospira
Pomatiopsidae	Leiostyla	Sculptariidae	Gulella
Blanfordia	Pupa	Sculptaria	Huttonella
Coxiella	Pupilla	Semelidae	Ptychotrema
Coxielladda	Pupisoma	Abra	Streptartemon
Hubendickia	Solatopupa	Amphidesma	Streptaxis
Hydrorissoia	Spelaeodiscus	Scorbicularia	Streptostele
Jullienia	Pupinidae	Semele	Strobilopsidae
Lacunopsis	Moulinsia	Sepiidae	Gittenbergia
Manningiella	Pollicaria	Sepia	Strobilops
Pachydrobia	Porocallia	Sepiolidae	Strombidae
Pachydrobiella	Pupinella	Sepiola	Lambis
Paraprososthenia	Realia	Siphonariidae	Orthaulax
Pomatiopsis	Schistoloma	Siphonaria	Rostellaria
Tricula	Tortulosa	Skeneidae	Strombus
Wykoffia	Pyramidellidae	Skenea	Terebellum
Potamididae	Chrysallida	Teinostoma	Tibia
Batillaria	Eulimella	Solecurtidae	Tricornis
Cerithidea	Odostomia	Azorinus	Strophocheilidae
Faunus	Pyramidella	Tagelus	Chiliborus
Pirenella	Turbonilla	Solemyidae	Strophocheilus
Potamides	Pyramidulidae	Solemya	Struthiolariidae
Pyrazus	Pyramidula	Solenidae	Struthiolaria
Telescopium	Ranellidae	Ensis	Subulinidae
Tympanotonos	Fusitriton	Phaxas	Homorus
Pristilomatidae	Galagna	Solen	Lamellaxis
Pristiloma	Gyrineum	Sphaeriidae	Leptinaria
Proserpinidae	Gyrium	Euglesa	Namibiella
Proserpina	Tritonia	Musculium	Neobeliscus
Psammobiidae	Retusidae	Pisidium	Neoglessula
Asaphis	Retusa	Potamida	Obeliscus
Gari	Rhytididae	Sphaerium	Opeas
Hiatula	Diplomphalus	Spiraxidae	Rumina
Psammobia	Natalina	Euglandina	Stenogyra

Table 4: continued

Subulina	Ripalania	Euchelus	Maoricolpus
Succineidae	Sermyla	Gibbula	Mesalia
Amphibina	Spekia	Jujubinus	Siliquaria
Catinella	Tarebia	Lischkeia	Siphonium
Neosuccinea	Thiara	Margarites	Turritella
Oxyloma	Thraciidae	Maurea	Turritellopsis
Quickella	Thracia	Melagraphia	Vermicularia
Succinea	Thyasiridae	Monilea	Umbraculidae
Succinella	Thyasira	Monodonta	Umbraculum
Systrophiidae	Thysanophoridae	Oxystele	Ungulinidae
Happia	Hojeda	Rotella	Diplodonta
Systrophia	Thysanophora	Tectus	Ungulina
Tellinidae	Tonnidae	Tegula	Unionidae
Angulus	Casmaria	Trochus	Actinonaias
Arcopagia	Cassidaria	Umbonium	Alasmidonta
Gastrana	Dolium	Trochomorphidae	Amblema
Macoma	Galeodea	Trochomorpha	Anodonta
Merisca	Malea	Truncatellidae	Arcidens
Phylloda	Morum	Geomelania	Caelahera
Psammotreta	Phalium	Tomichia	Cafferia
Quidnipagus	Tonna	Truncatella	Carunculina
Strigilla	Tornatellinidae	Turbinellidae	Conchodromus
Tellidora	Pseudoglessula	Tudicla	Contradens
Tellina	Tornidae	Turbinella	Cristaria
Tellinella	Cyclostremiscus	Vasum	Cucumerunio
Tellinides	Trapeziidae	Turbinidae	Cyclonaias
Terebridae	Trapezium	Astraea	Cyprogenia
Duplicaria	Tridacnidae	Astralium	Dysnomia
Hastula	Hippopus	Astrea	Elliptio
Terebra	Tridacna	Australium	Elongaria
Teredinidae	Trigoniidae	Batillus	Fusconaia
Kuphus	Neotrigona	Bolma	Hyria
Teredo	Trigonochlamydidae	Cookia	Hyriopsis
Testacellidae	Hyrcanolestes	Delphinula	Inversidens
Testacella	Trimusculidae	Guildfordia	Lamellidens
Thaididae	Trimusculus	Homalopoma	Lampsilis
Azumamorula	Triphoridae	Leptothyra	Lanceolaria
Concholepas	Triphora	Lunella	Lasmigona
Drupa	Trissexodontidae	Subninella	Leptodea
Forreria	Caracollina	Turbo	Ligumia
Morula	Gasulliella	Turridae	Medionidus
Neothais	Triviidae	Bela	Megalonaias
Rapana	Ellatrivia	Clavatula	Metaptera
Tribulus	Niveria	Gemmula	Microcondylaea
Vexilla	Trivia	Genota	Monodontina
Thiaridae	Trochidae	Lophiotoma	Nitia
Amphimelania	Austrocochlea	Nihonia	Obliquaria
Balanocochlis	Bankivia	Oenopota	Obovaria
Cleopatra	Callistoma	Perrona	Orthonymus
Hemisinus	Cantharidus	Polystira	Parreysia
Lavigeria	Chlorostoma	Thatcheria	Pectanculus
Melania	Cittarium	Turricula	Physunio
Melanoides	Clanculus	Turris	Pilsbryoconcha
Pachymelania	Danilia	Xenoturris	Plagiola
Paludomus	Diloma	Turritellidae	Plectomerus

Table 4: continued

Plethobasus	Veneridae	Agardhia	Ternivoluta
Pleurobema	Amiantis	Alaea	Voluta
Potamilus	Anomalocardia	Columella	Volutoconus
Potomida	Antigona	Isthmia	Volutocorbis
Proptera	Artemis	Pagodina	Volutomitra
Pseudanodonta	Bassina	Sterkia	Zidona
Pseudodon	Callista	Truncatellina	Xanthonychidae
Psilunio	Chamelea	Vertigo	Cepolis
Pterosyna	Chione	Vertilla	Ceras
Ptychobranchus	Circe	Vitrinellidae	Epiphragmophora
Quadrula	Circomphalus	Chamlongia	Hemitrochus
Quincuncina	Clausinella	Solariopsis	Humboldtiana
Rotundaria	Cyclina	Vitrinidae	Micrarionta
Scabies	Dosinia	Eucobresia	Monadenia
Scalenia	Eumarcia	Gallandia	Xenophoridae
Sinanodonta	Gafrarium	Helicolimax	Stellaria
Strophitus	Globivenus	Phenacolimax	Tugurium
Symphinota	Gomphina	Semilimax	Xenophora
Tritogonia	Irus	Vitrea	Zonitidae
Truncilla	Katelysia	Vitrella	Aegopinella
Uniandra	Lioconcha	Vitrinobrachium	Aegopis
Unio	Liocyma	Viviparidae	Allaegopis
Uniomerus	Macrocallista	Bellamya	Amphipepla
Velesunio	Marcia	Campeloma	Balcanodiscus
Villosa	Megapitaria	Cipangopaludina	Bertia
Urocoptidae	Mercenaria	Filopaludina	Carpathica
Anoma	Meretrix	Idiopoma	Coxia
Autocoptis	Pelecyora	Lioplax	Crystallus
Brachypodella	Periglypta	Mekongia	Discoxychilus
Cochlodinella	Pitar	Notopala	Eopolita
Gongylostoma	Pitarenus	Paludina	Gastrodonta
Heterocoptis	Placamen	Siamapaludina	Glyphyalina
Macroceramus	Protothaca	Sinotaia	Gyralina
Microceramus	Puberita	Trochotaia	Hawaiia
Tetrentodon	Pullastra	Viviparus	Hyalina
Urocoptis	Ruditapes	Volutidae	Lindbergia
Urocyclidae	Saxidomus	Adelomelon	Meledella
Thapsia	Sunetta	Alcithoe	Mesomphinx
Trochonanina	Tawera	Amoria	Morlina
Valloniidae	Timoclea	Ampulla	Nesovitrea
Acanthinula	Tivela	Cymbiola	Omphalina
Aspasita	Venus	Cymbiolacca	Oxychilus
Planogyra	Vermetidae	Cymbium	Paraegopis
Spermodea	Bivonia	Ericusa	Pyrula
Vallonia	Naquetia	Festilyria	Retinella
Zoogenetes	Petaloconchus	Fulgoraria	Turcozonites
Valvatidae	Serpulorbis	Fusivoluta	Ventridens
Borysthenia	Spiroglyphus	Halia	Vitrinizonites
Cincinna	Vermetus	Harpulina	Zonites
Cristataria	Veronicellidae	Iredalina	
Valvata	Laevicaulis	Livonia	
Vanikoridae	Sarasinula	Lyria	
Vanikoro	Vaginulus	Melo	
Vasidae	Veronicella	Scaphella	
Afer	Vertiginidae	Teramachia	

Fig. 39, 40: Members of the gastropd families Xenophoridae (**39**) and Melongenidae (**40**) as presented in the exhibition "Myth Beauty. Facets of beauty in nature, art and society" in the Castle Museum Linz 2015/2016.

and more than hundred in each case stem from Papua New Guinea, New Zealand and French Polynesia.

A peculiarity are the 13 series from hot vents in the East Pacific Rise (see page 603, 657) and three samples from the Antarktis.

The collection journeys of Fritz Seidl and Christa Frank on nearly all continents are listed in Table 7 and 8, repectively.

Four of the eight classes of molluscs are covered in our collection, predominantly members of the Gastropoda and Bivalvia; very few series exist of taxa in the Polyplacophora, Scaphopoda and Cephalopoda (Tab. 3, Fig. 35, 36).

Our **working classification** or ergotaxonomy focuses on valid genera, families and superfamilies to reveal an overviews and fasciliate the search for taxa of interest (see Tab. 3, 4). Spelling variants and subjective synonyms have been excluded. This ergotaxonomy largely follows BOUCHET et al. (2005), the World Register of Marine Species (WoRMS) and the World Mollusc Species Data Base (WMSD); it is considered as provisional and no taxonomic changes were intended.

The **coverage within bivalves**, counting 70 families, is two thirds of the around 100 bivalve families recognized by most modern (western) authors. This amount represented is quite high considering the much lower species number and sampling frequency compared to gastropods. Of the 42 superfamilies most taxa belong to the Unionoidea, followed by the Veneroidea, Tellinoidea, Cardioidea and Pectinoidea.

The at least 1485 **gastropod** genera are distributed into 91 superfamilies, of which seven contain more than 60 genera, viz. Helicoidea, Muricoidea, Rissooidea, Clausilioidea, Orthalicoidea, Buccinoidea, and Cerithioidea. Between 31 and 50 genera belong in each case to Pupilloidea, Cyclophoroidea, Achatinoidea, and Cyclophoroidea. In total at least members of 236 families can be found in Linz.

Fig. 41: African (sub)species represented in the OLML mollusc collection: **a** – *Aspa marginata*, Morocco; **b** – *Cerithium atratum*, Cape Verde; **c** – *Cleopatra exarata*, Kenya; **d** – *Cypraea diluculum*, Mozambique; **e** – *Crepidula porcellana sulin,* Senegal; **f** – *Egouena monilis*, Ethiopia; **g** – *Eulima flexuosa*, Mauritius; **h** – *Marginella cleryi*, Mauritania; **i** – *Mitra servaini*, Tunisia; **j** – *Phasaniella kochi rubra,* Mauritius; **k** – *Poropteron uncinarius*, South Africa; **l** – *Scalptia scalata*, Mauritius; **m** – *Thais coronata*, Senegal; **n** – *Tropidophora consocia*, Madagascar; **o** – *Urosalpinx purpuroides*, South Africa; **p** – *Vexillum speciosum*, Mauritius.


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Fig. 42, 43: American (sub)species represented in the OLML mollusc collection: **a** – *Amnicola limosa parva,* USA; **b** – *Birgella subglobosus*, USA; **c** – *Columbella major*, Panama; **d** – *Fluminicola coloradensis*, USA; **e** – *Helicina clappi*, USA; **f** – *Lucidella undulata granulosa,* Jamaica; **g** – *Nodilittorina tuberculata,* Guadeloupe; **h** – *Promenetus umbilicatellus*, USA; **i** – *Puperita pupa*, Cuba; **j** – *Triodopsis fosteri,* USA; **k** – *Chondropoma pictum sagra,* Cuba; **l** – *Conus armillatus*, Aruba; **m** – *Cypraea gaskoini*, USA; (43) **n** – *Drymaeus multilineatus*, USA; **o** – *Favartia alveata*, USA; **p** – *Goniobasis livescens livescens,* USA; **q** – *Licina fossor*, Aruba; **r** – *Marginella prunum*, Costa Rica; **s** – *Nitidella laevigata*, Cuba; **t** – *Palaina occidentale tucma,* Peru; **u** – *Partulina bella*, USA; **v** – *Volutomitra groenlandica*, Greenland; w – *Strombus microurceus*, Guam; **x** – *Truncatella pulchella*, Bahamas; **y** – *Turritellopsis acicula*, Canada; **z** – *Urocoptis livida costellaris,* Cuba.

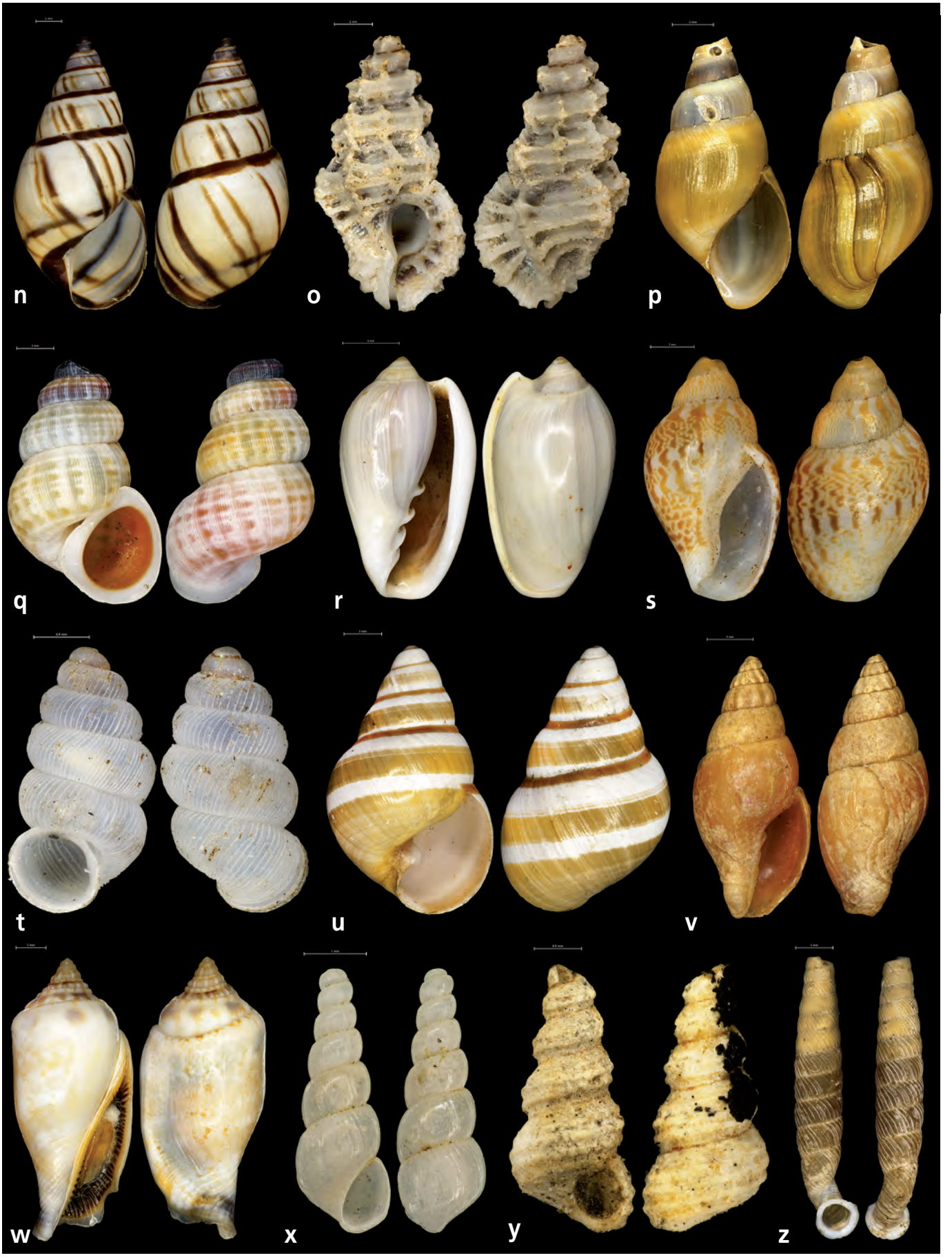
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Fig. 44: Asian (sub)species represented in the OLML mollusc collection: a – *Clenchiella microscopica*, Thailand; b – *Moulinsia grande*, Philippines; c – *Gyrineum gyrinum*, Philippines; d – *Crepidula walshi*, Singapore; e – *Nodilittorina pyramidalis pyramidalis*, Sri Lanka; f – *Phasianella modesta*, Japan; g – *Pythia plicata*, Sri Lanka; h – *Salinator takii*, Singapore; i – *Siphonaria laciniosa*, Singapore; j – *Siphonaria normalis*, Malaysia; k – *Cerithidea weyersi*, Thailand; l – *Clypeomorus subbreviculus*, Japan; m – *Cypraea asellus*, India; n – *Diplommatina balansai*, Viet Nam; o – *Iravadia bombayana*, Singapore; p – *Mitra tabanula*, Philippines; q – *Oliva panniculata*, India; r – *Phenacovolva longirostris*, Japan;

Fig. 45: Asian (sub)species represented in the OLML mollusc collection: a – *Pterygia fenestrata* India; b – *Pupinella rufa*, Japan; c – *Pythia ovata*, India; d – *Smaragdia rangiana*, Philippines; e – *Stenothyra basisculpta*, Lao People's Democratic Republic; f – *Thais rufotincta*, Singapore; g – *Tibia crispata*, Philippines; h – *Tortulosa tortulosa*, Thailand; i – *Vexillum bernhardina*, Philippines.

Fig. 46: Indopacific (sub)species represented in the OLML mollusc collection: a – *Cypraea englerti*, French Polynesia; b – *Gabbia* sp., Australia; c – *Gonatorhaphe fornicata*, Vanuatu; d – *Helicina culminans*, Tonga; e – *Helicina multicolor*, Tonga; f – label as "*Hydrobiidae* n. gen. n. spec.", Australia; g – *Opacuincola caeca*, New Zealand; h – *Strepsitaurus ningaloo*, Australia; i – *Trochidrobia inflata*, Australia; j – *Trochidrobia punicea*, Australia; k – *Amalda australis*, New Zealand; l – *Cerithium egenum*, French Polynesia; m – *Cirsotrema zelebori*, New Zealand; n – *Coxiella exposita*, Australia; o – *Cypraea helvola*, French Polynesia; p – Epitonium *pallasi*, Australia; q – *Imbricaria olivaeformis*, French Polynesia; r – *Melampus fasciatus*, Australia;

Fig. 47: Indopacific (sub)species represented in the OLML mollusc collection: a – *Mesoginella pygmaea*, New Zealand; b – *Nerita plicata*, Australia; c – *Neritina oualanensis*, Vanuatu; d – *Oliva oliva tigridella*, Australia; e – *Potamopyrgus niger*, Australia; f – *Realia aupouria*, New Zealand; g – *Strombus wilsoni*, Marshall Islands; h – *Vexillum exasperatum*, Papua New Guinea; i – *Vexillum pardalis*, Papua New Guinea.

Fig. 48: European, exclusive Austrian (sub)species represented in the OLML mollusc collection: a – *Belgrandia mariatheresiae*, Italy; b – *Belgrandiella kusceri*, Croatia; c – *Bithynia leachi prespensis*, Macedonia; d – *Bithynia majewskyi*, Greece; e – *Chilopyrgula zilchi*, Turkey; f – *Epitonium lamellosum*, Spain; g – *Eulimella acicula*, United Kingdom; h – *Hydrobia anatolica*, Turkey; i – *Hydrobia vegorriticola*, Greece; j – *Iglica luxurians*, Slovenia; k – *Ohridohoratia pygmaea*, Macedonia; l – *Pseudamnicola sturanyi*, Macedonia; m – *Renea elegantissima*, Italy; n – *Saxurinator orthodoxus*, Bosnia; o – *Testacella haliotidea*, Croatia; p – *Tricolia pulla*, Croatia; q – *Xestopyrgula pfeiferi*, Turkey.

139 figures show taxonomic examples confined to specimens in the millimeter range. The diverse taxa are **grouped by continent** (Fig. 41–48). Ines Blatterer made the pictures using the NIKON confocal microscope in the Biologiezentrum Linz. Stacking technique is operating with the imaging software NIS-Elements D (NIKON). The photographs were digitally improved.

Institutional contributions and biographical sketches of outstanding contributors

Collections without collectors, enigmatic binomina and nameless specimens as if from nowhere

Preserved specimens bearing no collection date, sampling locality and ideally the family name of the gatherer (male or female) are currently considered as scientifically worthless, thus negligible. In our opinion, however, the historical circumstances should be taken into account, namely that there existed no evolutionary and biogeographic concepts at the early days of natural history museums. Since the middle ages collections (cabinetts) of naturalia, particularly of minerals and organic "hardware" like shells, chitinous insects and bones (opposed to artifacts or "Artificialia", i.e. objects made by man), fulfilled many different functions such as being a life assurance for future sustencance (see page 640ff.), demonstrating exotic interests and/or rich ownership by marvelling few selected visitors. Scientific interests for the specific organisms and general educational aspects were a rather late invention. Anyhow, these dateless samples may suggest at least a collecting before 1900, if not even to be placed in the 18th century. Therefore, the proportions of unnamed, unlocated and anonymous preserved vouchers, present in almost every bigger museum should be considered as resources to discover new species, to unravel taxonomic concepts of seemingly known (sub)species, which often lack preserved type material anchoring concrete specimens to a name, and to learn about cultural and natural history as the following examples may indicate:

1) Christa Frank studied and partially figured a gathering in the grammar school of **Hollabrunn** (Lower Austria), estimated as collected around 1850 with a focus on the Balkanian and Carpatian regions, and clarified the taxonomic identity of more than 150 gastropod species (FRANK 2000). She noted the difficulties that labels have been mixed or lost, the puzzling numbering system and the frequent absence of localities and collector dates. Her search on involved persons also included the comparison of handwritten labels in museums of Vienna and Klagenfurt (Carinthia) leading to a possible solution, but many uncertainties remain. These series are now deposited in Linz.

Fig. 49: Unsorted series remaining from the German Benedictine Abbey of Ottobeuren, which have been collected between 1830 and before 1884; an inventory still needs to be taken.

Table 5: Provisional backward reconstruction combining the institutional, monastical and later personally allocated collections currently housed in OLML. The relevant actors concerning molluscs are given in bold.

Year	Event	Person(s) involved (see pxy)	Place where the incident occured
2018	visit of monastery Schlägl (archivar abxy)	Aescht & Bisenberger	Schlägl
2015	restitution of six larger gastropods	Aescht	Hohenfurth
2010	discovery of the trace to the Maria von **Born**'s mollusc collection	Helmut W. Flügel, Aescht	Graz, Linz
2011	electronic availability of books of taking possession and the overarching official accession books (until 2014)	LM	
2003	discovery of the handwritten notice concerning the Schlägl collection	Aescht	Linz
1948	restitution of naturalia	LM	Wilhering
1944	confiscation of naturalia	Reich Governorate & LM	Wilhering 2
1943	confiscation of naturalia, e.g. 1 number for >12.000 molluscs	Reich Governorate & LM	Schlägl, St. Florian
1942	confiscation of naturalia	Reich Governorate & LM	Wilhering, Hohenfurth
1941	confiscation of non-molluscs (until 1944)	Reich Governorate & LM	Schlägl
1939	order for recording essential contents of all the monastery archives	Reich Governorate & LM	Vienna, Linz
1842	contract on a mollusc collection	Anton Lebschy & Anna Maria Megerle	Schlägl
1840	death of	Johann **Karl Megerle** von Mühlfeld	Vienna
1830	death of	Maria Aloysia von Born	Nizza
1825	printed inventory of the Sigismund von **Hohenwart** collection	J. H. Hausmann (author) & Eurich Friedrich (publisher)	Linz
	death of	Bishop Sigismund von Hohenwart	Linz
1816	sale of a mollusc collection	Maria von Born likely not to Sigismund von Hohenwart, but to Karl Megerle	Vienna/Linz
1815?	taxation of Maria von Born's mollusc collection	Karl Megerle	Vienna
1806	ban on mollusc trading of Johann Karl Megerle von Mühlfeld	?	Vienna
1803	ennoblement of	Johann Baptist Megerle von Mühlfeld	Vienna
1798	beginning of mollusc trading	Karl Megerle	Vienna
1791	death of	Ignaz von Born	Vienna
1786	custos of NHMW collection (until 1792/1802?)	Karl Megerle	Vienna
1776	close relationships (until 1789) between	Ignaz & Maria von Born & **Maria Anna** von Österreich	Vienna, Klagenfurt
	contract to order the collection of Franz I. Stephan [until 1779] between	**Ignaz von Born** & Maria Theresia	Vienna
1772?	designation as child prodigy	**Maria von Born**	Prague
1766	birth of	Maria Aloysia von Born	Prague
1748	sale of a mollusc collection	Franz I. Stephan & Johann Knight von Baillou	Vienna

2) Fritz Seidl got a huge collection, embracing around 15.000 specimens, from the German Benedictine Abbey of **Ottobeuren**, near Memmingen in the Bavarian Allgäu, Germany. On 22 September 1984 ordered by the abbey custos Father Aegidius **Kolb** gave it to Seidl including the information that it was sampled between 1830 and before 1884. If the collection was bought or donated in unknown, anyhow one can suspect that the institution seemingly became uninterested in naturalia. In 2018 Agnes Bisenberger contacted the archivar of the monastery Father Rupert Prusinovsky, who sent four pieces of informations: (a) the index of genus names of a voluminous handwritten "Conchylien-Catalog" from 1881ff, (b) parts of the selfbiography of Father Kaspar **Kuhn** (1895), the then custos of the naturalia, who lived from 1819 until 1906, and (c, d) two historical articles. This material revealed that the collection of the tax inspector Anton Baumann

(?–1880) of Munich was bought (1400 mark) from his widow by Father Kaspar Kuhn in 1881. It embraced, among the unmentioned total number, about 3000 nameless specimens, which were determined by Graf Max von Otting in Munich in the course of two years. Until 1895 the number of which was increased by Kuhn being a member of an exchange association to about 5700 species and more than 15,000 specimens; he further mentioned buyings in Erfurt, Basel and London. Further details, particularly on the handwritten "Conchylien-Catalog", need to be researched in situ.

3) In Upper Austria the plan to install a "Führer Museum" for Adolf Hitler in Linz led to the confiscation of four monastery collections in the surroundings between 1941 and 1944:

(a) The Cistercian monastery of Vyšší Brod or **Hohenfurth** Abbey (Czech Republic) was founded in 1259 (https://www.klastervyssibrod.cz/History%5ben%5d) and lies a few kilometres from the northern Austrian border in South Bohemia (Czech Republic).

(b) The Cistercian monastery of **Wilhering** was founded in 1146 (https://en.wikipedia.org/wiki/Wilhering_Abbey) and lies eight kilometres in the west of Linz. In 1940, Wilhering Abbey was expropriated by the Nazis, and the monks were expelled.

(c) **St. Florian**, the oldest monastery of the Augustinian Canons Regular in Austria and famous for the "Anton Bruckner Organ" (http://www.stift-st-florian.at/en/home.html), is an outstanding Baroque jewel near Linz.

(d) The monastery of **Schlägl** was founded by an order in the 13th century for the development of the Bohemian Forest (https://www.stift-schlaegl.at/).

The expropriation concerned, beside molluscs, also all minerals, zoological, botanical, technical objects and artifacts. The restitution of the latter has been investigated in detail (KIRCHMAYER et al. 2007). As regards the naturalia, however, the history of these incidents and provenance of concrete specimens need to be investigated by scholars in the **humanities** and **natural sciences** as well. The former due to the cultural relevance and partly religious and aristocratic background. The latter due to the neccessity to (re)identify the organisms and to actualise the scientific background (if any).

At first glance there are many contradictory informations available concerning verifiable, e.g. differing years reported, and supposed facts, for instance one has to clearly differentiate which segment (minerals, organic remains or artifacts) is concerned. Moreover, many prerequisites became accessible only successively during the last years, e. g. the handwritten books of taking possession, mentioned by nobody until then, and the overarching official accession books have been scanned and made internally visible in 2011 and 2014, respectively. A first overview of these widely inscrutable events is reconstructed in Table 5.

The Reich Governorate in Vienna had arranged that all the monastery archives of the Land of Austria be recorded in their essential contents. On January 28, 1939, the corresponding order was issued, which was performed between 22 February and 13 June [Z07255].

With the decree of the Reich Governor ("Gauselbstverwaltung") from 28 November 1941, the supervision of the scientific monasterian collections was transferred to Dr. Theodor Kerschner, the then director of the Museum. This includes that the natural objects located in the former (sic) monasteries St. Florian, Wilhering, Schlägl and Hohenfurth had to be transported to Linz.

In the archive of the directorate exists an uncommented post card (D 256/41) listing six administrators of the monasteries during wartime. The monasteries of Lambach and Kremsmünster were also included, but seemingly no "transfers" occurred. A letter dated from 19 December 1941 drastically described the lack of space suggesting a provisional transport of all collections to the monastery of Wilhering. The answer has not yet been found in the unordered convolute. Where the objects definitively had been stored is not reported in detail, but they were successively moved to Linz between 1941 and 1944 (Tab. 5).

In handwritten books of taking possession approximately 2550 "positions" of diverse zoological objects have been inventorised referring to years and numbers in the following sections:

(a) Hohenfurth (43 scans): 1942/1–402. Of the more than 300 currently allocated data sets on molluscs, some came from Cuba, India and Malaysia.

(b) Wilhering: 1. (44 scans) 1942/959–1453 (August), 2. (33 scans) 1942/1467- complicated new numbering; 3. (46 scans); 4. (28 scans) including type written notices. Of the nearly 100 currently allocated data sets, some came from India, Indonesia and Bolivia.

(c) St. Florian: 1. (40 scans) 1943/11–523 (March), 2. (39 scans) 524–1029 (April), 2. (39 scans) 1030-1650 (May). Under the reversed version of notation 1631/1943 severals counts summarise to 587 bivalves and 181 gastropods resulting in the abstract total (unnamed) of 768. Except European specimens, no locality is given.

(d) Schlägl (10 scans): 1941/70-217, 1753–1759; 1942/1291; 1943/1414–1429, 1626, 1641-1644,

1944/100-109. Note that more than 12,000 mollusc series bear only one collective accession number (see page pxy), an early example of becoming too much work. Currently, about 1505 data sets are allocated for sure, some came from China, Japan, New Zealand and USA.

After the Worldwar II, parts of the of St. Florian collection were restituted in 1945 (GUSENLEITNER 1983: 139, 141), that of Wilhering on 4 June 1948, and from 2009 to 2015 that of Vyšší Brod (Hohenfurth). If there have been official contacts with the monastery of Schlägl is unknown to us.

Specific recent reconstructions

The provenance of the mollusc collections hosted in Hohenfurth and Wilhering are currently unknown. Likewise, if missionaries were involved in building the gatherings has to be researched. As regards St. Florian, KERSCHNER (1941) reports that the beginnings of this collection, which contained over two thousand gastropods and about a thousand bivalves, date back to the year 1750; by far the largest part, however, was purchased by the Viennese banker and mineralogist Friedrich van der Nüll in the year 1802 for 1,500 florins ("Gulden"). In contrast to his mineral collection (FLÜGEL et al. 2011; HUBER & PETER 2011), the whereabout of his molluscs remains to be studied.

Before we go into details of our reconstruction restricted to the monastery Schlägl collections, we have to introduce the persons involved and announced in Table 5. Some of them are easily mistaken in the literature, e.g. there have been three custodians with the family name Megerle [von Mühlfeld] related to the Natural History Museum in Vienna, which had different activity centers (see page 644), but compare the partially contradictory statements in RIEDL-DORN 1996 and ESCHNER 2018):

Johann **Baptist Megerle von Mühlfeld** (1742–1813) started in 1748 in the empire collection of Franz I. Stephan and worked there for 42 years concerned with minerals and geological materials, for which he was ennobled as "von Mühlfeld" in 1803. He had two sons:

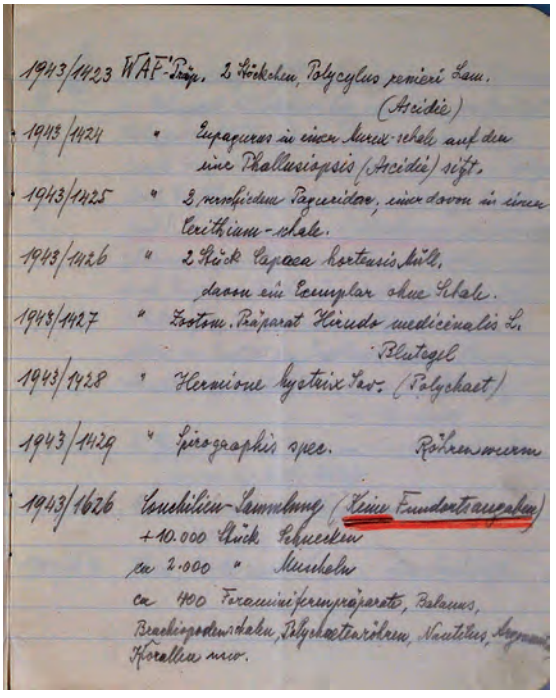
Johann **Carl [Karl]** (1765–1840), who on a voluntary basis performed ordering work in the empire collection since 1786, later he became adjunct custos (1792) and finally custos (1797) of the entomological collection. Mainly an entomologist (SCHENKLING 1935), he published 3 papers on mollucs (MEGERLE VON MÜHLFELD 1811, 1824, 1841).

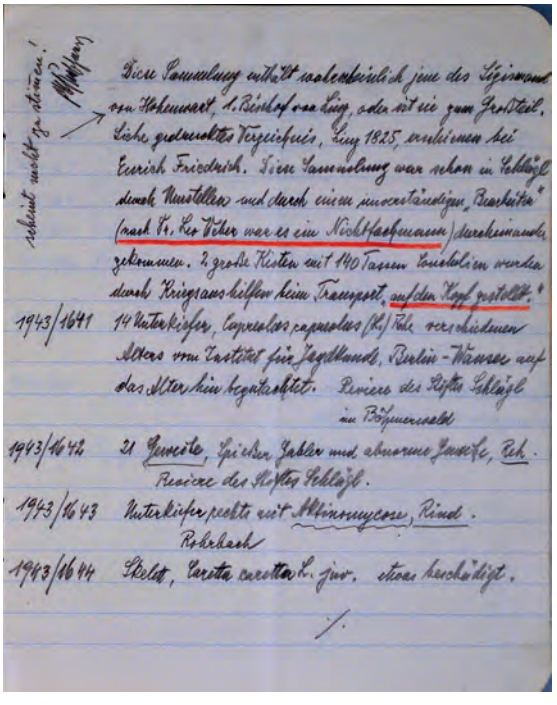
Whereas Johann **Georg** (1780–1831) on a voluntary basis attended the entomological collection between 1802 and 1805 (SCHENKLING 1935) or 1806 (ESCHNER 2018). He became an archivar (1810–1816) and genealogist, by the way he published about colouring plants and insects in agriculture.

Likewise, **Sigismund** Ernst Graf von **Hohenwart** (1745–1825) and his uncle **Franz** Josef Hannibal Graf von Hohenwart (also **Hohenwarth**; 1771–1844) must be kept apart, a still quite confusing matter. The former is known as botanist and 1st Bishop of Linz; his herbarium was said to be in the monastery St. Florian another collection (of what) in Graz, but see page 643f.). The latter is associated to (now) Slovenia, held a remarkable mineral and mollusc collection and was honoured by malacologists with generic and specific names, viz. *Hohenwarthia* A. Letourneux & Bourguignat 1887, Rossmässler (1839) introduced *Achatina* (currently *Hohenwartiana*, established by Bourguignat in 1864) *hohenwarti*.

Archduchness Maria Anna Josepha Antonia von Österreich (1738–1789), also called **Marianna**, was born as the second daughter of Maria Theresia and Franz I. Stephan of Lorraine. Health problems, e.g. incorporation of the spine, contributed to her remaining unmarried. The sudden death of her father in 1765 changed her life – she sought solitude and focused on systematic scientific activity (mineralogy, numismatics, physics, chemistry, botany, etc.). Marianna devoted herself to her father's extensive collection – which later became the Natural History Museum - and built up her own collection of minerals and insects. Between 1776, when the **Born** family arrived in Vienna, and 1781, when she moved to Klagenfurt, Ignaz von Born was her mentor. Helmut W. Flügel (2013; letter from 6 January 1786) mentions that afterwards Ignaz (and partially Maria) von Born visited Marianna in Klagenfurt one month per year.

Ignaz von Born (1742–1791) was a mineralogist and palaeontologist in Prague and from 1776 by an order from Maria Theresia curator of the imperial natural history collections („Hof-Naturalien-Cabinett") supported by Georg Sebastian **Helbling** von Hirzenfeld (1751–1782) for the Conchylia until 1780, when the latter moved to the University of Mantua and others including Johann Baptist Megerle von Mühlfeld for minerals (RIEDL-DORN 1996; FLÜGEL 2006, 2007 and references therein). Planned were publications on the contents of the entire collections. 1778 appeared an index, two years later followed by a superb volume on "Testacea", embracing snails and all the so-called 'oysters', with numerous hand-colored copper plates. Both works are written in Latin, but the former includes vernacular names, e.g. for German on 30 pages including the page and figure number, as well as for Belgian, English and French languages. In the latter these 4 lan-





guages are confined to indices, respectively. The systematics and nomenclature was according to the method of Linnaeus. Due to financial shortage Ignaz von Born sold his mineral collection to England before he came to Vienna. The fate of his later gathers, particularly molluscs, remains to be investigated.

Maria Aloysia von **Born** (1766–1830), under her nickname "Mimi", was denoted as child prodigy, because only six years old she was announced by her father Ignaz the best knower of minerals in Prag, simultaneously starting with a mollusc collection (Riedl-Dorn 1996: 39). Honoring Ignaz von Born, Georg Sebastian **Hebling** [von Hirzenfeld], custos in the Natural History Museum in Vienna, described the new *Patella borniana* in 1779 "Aus der Sammlung des hoffnungsvollen Fräuleins Maria von Born" [originating from the collection of the promising young lady Maria von Born].

Fig. 50: Sector of a drawer of the monastery Schlägl.

Fig. 51a, b: Handwritten inventory book of OLML concerning the mollusc collection of the monastery Schlägl (see text for translation). Note the inventory number 1943/1626 and the red underlined remarks, the first meaning "without place of origin", the second "according to Dr. Leo Weber, this was a non-specialist" and the third "turned upside down".

Maria von Born married the Italian count Tommaso (Tomo) Bassegli in 1786, however soon they separated (but did not divorce), because as lower aristocrat she was not accepted by his family. In 1792 she went to America, where she married a man whom she knew from Vienna, the Swiss-born and later US military Johann Jakob Ulrich Rivardi, through which she got to know living under extreme conditions with two common children in a fort. After his retirement, due to financial restrictions she opened a girls' school in 1802 in Philadelphia and (as a widow) landed in the guildhall and finally returned to Vienna in 1815. Where she remained for two years before she moved successively to Trieste, Venedig, Livorno and Nizza, where she died in 1830 (Flügel 2013).

Evidences for the allocation of vouchers to specific persons

In **2003** Aescht announced a small sensation, which was seemingly not mentioned in any annual report and requires more intensive research, namely that there are indications of a collection of the first bishop in Linz **Sigismund von Hohenwart** (1745–1825) hosted by the LM. The inventory book under the year of 1943 and the accession number 1626 (Fig. 51, 55) records the entrance of about 10,000 gastropods and 2000 pieces of bivalves from the monastery Schlägl with the following handwritten note [translation mine]:

XIIId 1082

rzeichniss

einer vortrefflichen

Conchylien-Sammlung

und

der dazu gehörigen Bücher,

welche

der hochwürdigste Herr Bischof

zu Linz,

Herr Sigismund v. Hohenwart,

Mitglied mehrerer gelehrten Gesellschaften, Commandeur des kaiserl. österreichischen Leopoldordens etc. etc.,

hinterlassen hat,

und

Herr J. H. Hausmann,

in der untern Pfarrgasse Nro. 192,

zum Verkaufe anbiethet.

O. ö. Landesmuseum
Linz a. D.
Naturhistorische Abteilung.

Linz, 1825.

Gedruckt bey Friedrich Eurich.

Fig. 52: Printed inventory concerning the collection of the first bishop in Linz Sigismund von Hohenwart from the OLML library.

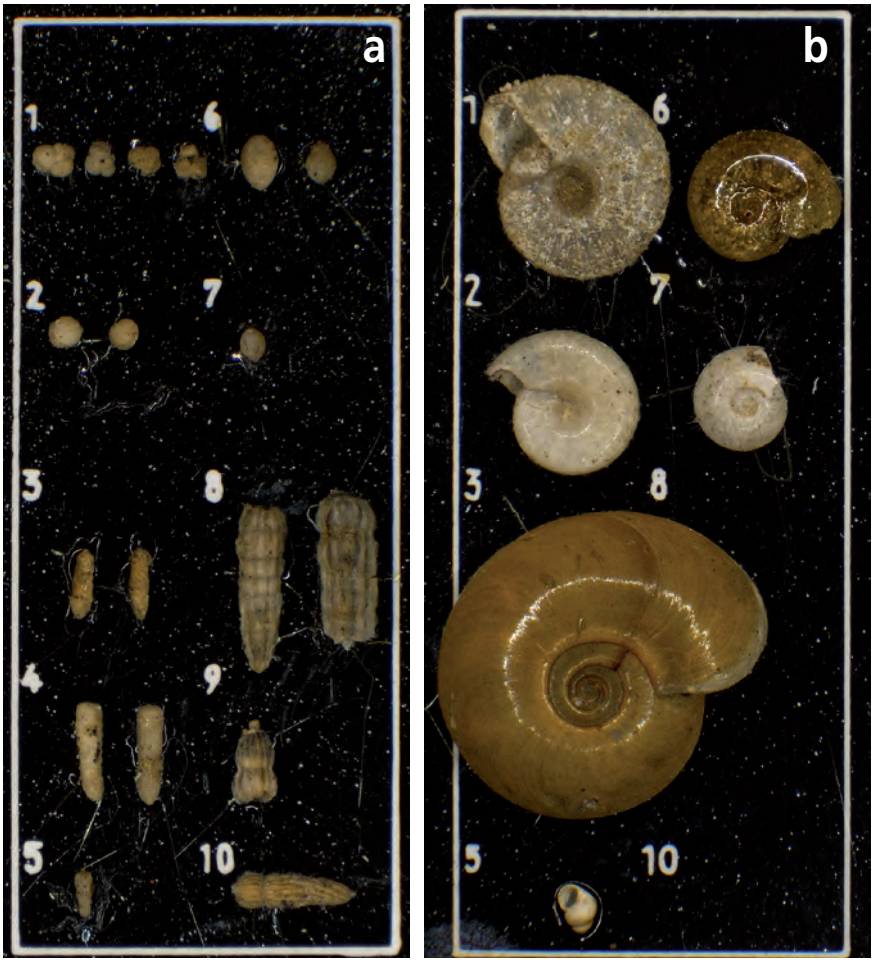


Fig. 53a, b: Collection of microscopic conchylia, viz. unicellular foraminiferans (**53a**), a gastropod example is given in (**53b**).

"This collection probably contains or is largely that of Sigismund von Hohenwart, 1st Bishop of Linz. See printed inventory, Linz 1825 published by Eurich Friedrich"and further „This collection was already in Schlägl by accident and by an incomprehensible person dealing with (according to Dr. Leo Weber, this was a non-specialist) has been confounded. Two large boxes with 140 cups of conchiles were turned upside down by wartime transport."

The printed inventory, a booklet with 37-pages, still exists physically and in the meantime has been scanned. The title page reports the sale by „Mr. J. H. Hausmann, in the Untere Pfarrgasse Nro. 192" (Fig. 52), who presumably wrote the text. In the „Preliminary report on the condition and equipment of the former Hohenwart Conchylien collection" he regrets „The arrangement of the showcases did not allow more than 120 specimens to highlight, although many others who are in the store, this award still earned. With regard to the wealth of this collection, this statement is generally valid: there are over 400 shells that are systematically organized; snails over 1400, among which 171 indigenous ... Of sea animals, plants, barks, etc. are more than 100 pieces available. Finally, there is a nice collection of microscopic conchylia [foraminifera] of 770 specimens, which are mounted on black, small tripods, 4 each over a ledge, on the reverse side of which is the German designation. The entire collection, with no difference between the specimens, consists of more than 2500 specimens" (HAUSMANN 1825). The „related books" comprise 7 titles with a total of 22 volumes. 13 volumes of the „systematic Conchylien Cabinet" (1769–1788) by Martini & Chemnitz are still present as well as the mostly unicellular foraminiferans (Fig. 53a), a gastropod example is given in (Fig. 53b). These facts are strong indication of the existence of the so-called Hohenwart-collection in the LM.

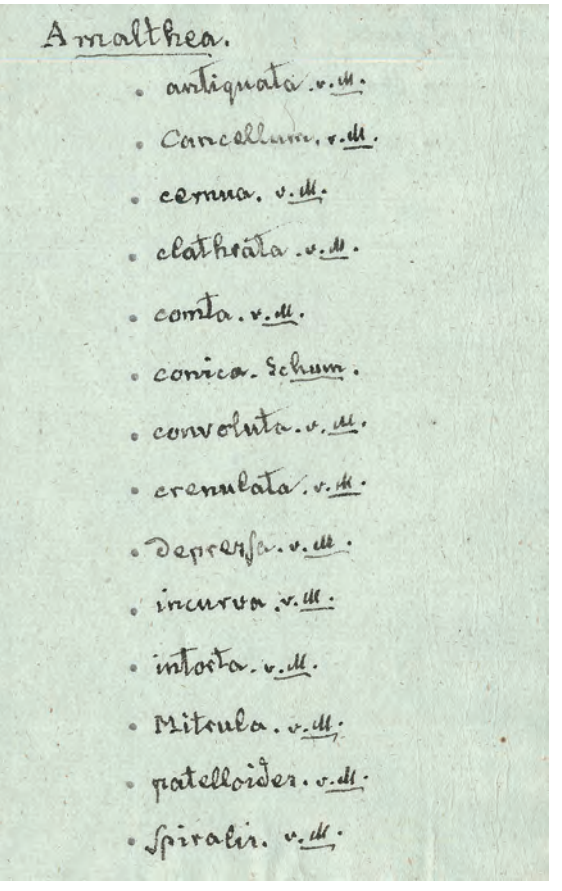
In **2010** began a correspondance with the retired palaeontologist Helmut W. **Flügel** began, who was very interested in the history of science, specifically the persons around geohistory, including the **Born** family (FLÜGEL 2007). In his biography of an emancipated Austrian woman, Maria von Born, in a transition period Flügel (2013: 158f.; translation and additions in square brackets mine) cited Maria's letter of 8 Juni 1816 to the German-Danish professor of theology and bishop Friedrich Münter that she was recalled by her friend, the Convent Lady [Maria Anna von] Dietrichstein [1750–1833], on the only remnant of her past well-

being, a collection of conchylia which she had carefully preserved during her long absence [1792–1815]. This collection had arisen under her father's supervision and was largely increased by a donation of archduchness **Maria Anna** Josepha Antonia von Österreich. The custos of the Naturaliencabinet, a certain Hr. Mühlfeld [in contrast to Flügel, who supposed Georg, Karl is more likely, see above (see page 640)] estimated her collection and confirmed that it is in good order, and that in Vienna, it would be worth at least from 1200 to 1500 gulden convention money [today corresponding to approximately 60,000 Euro].

Although she did not find a buyer for a long time, in a letter of 23 October 1816 Maria reported that she sold her collection to the Bishop of Linz **[Sigismund von Hohenwarth]** although she received only the fifth part of the sum of the estimated value, for it. Shortly later, on 25 November, however she indicated a "more fortunately solution...", which remained undetailed however. So, would it be possible that Karl Megerle purchased it and even prepared the ["Hohenwarth"] catalogue, which was delivered in 1825?

The junior author has seen the very detailed original testament of Sigismund von Hohenwarth on 21 March 2018, but did not find any hint on a mollusc collection and likewise on a herbarium, which is said to be deposited in the monastery St. Florian.

Fig. 55: A bivalve specimen showing inside two handwritten labels with numbers and the species epithet "Schmidtii v. M." below the collective inventory number of the "Schlägl collection" and the current subnumber 698.



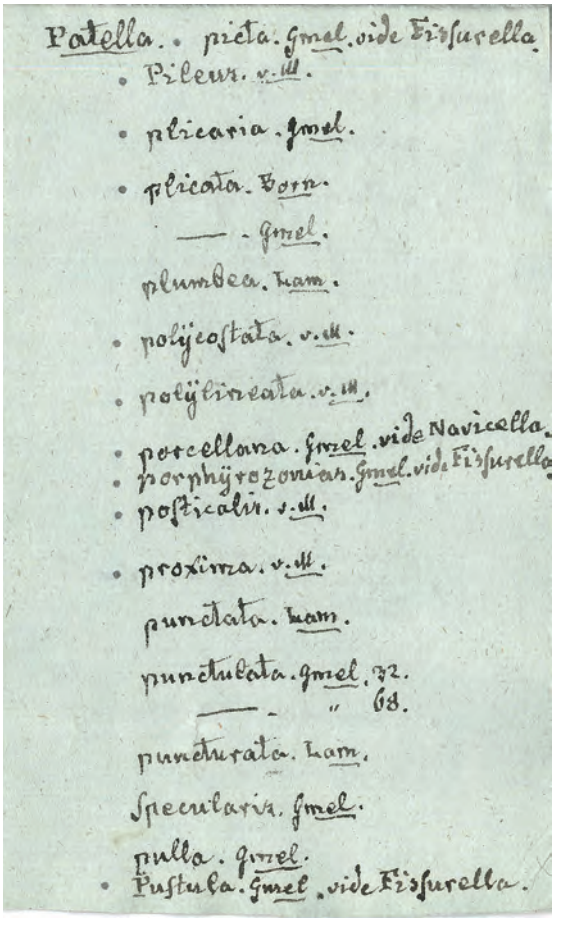


Fig. 54a, b: Two pages of the handwritten index of the "Schlägl collection" on 52 unbound sheets, where the abbreviation "v. M." is interpreted as [Johann Carl Megerle] von Mühlfeld.

Considering the eventful life of Maria Aloysia von Born (or Countess Bassegli or "Madame Rivardi l'Americaine" as she was also known), it is likely that her collection originated between 1772, when she was called "child prodigy", and 1786 (first marriage). Beside self collecting in Prague to a minor extent and donation of archduchness Marianna (see page 640), it seems likely that "Mimi" received also so-called "duplicates", which have been considered as copies of the typical species, from the Natural History Museum in Vienna and/or her father personally. Due to her financial situation, it is unlikely that she could buy many series from traders.

In **2018**, we visited the archivar Dr. Petrus A. Bayer of the monastery of **Schlägl** for research on the history of their gatherings and he fortunately found letters from 1841 and a handwritten contract [not yet transcribed] between Abbot Dominik Anton Lebschy and the Anna Maria Megerle, the wife of Johann **Carl [Karl] Megerle** von Mühlfeld dated on 1 April 1842. This treaty ensured a lifetime pension of 250 gulden as equivalent for around 10,000 specimens (?). It is said that she grew very old, although no exact dates could be found. This is the strongest argument for a positive answer to our question above. A second argument is that the Schlägl collection was accompanied by an unsigned, **handwritten index** on 52 unbound sheets (Fig. 51). It is arranged alphabetically by genus and species, many of which show as author the abbreviation "v. M.", which can easily be interpreted as "von Mühlfeld". In any case it does not resemble the handwriting of Maria von Born.

The second part of the question concerns the authorship of published "Hohenwarth" catalogue. The abbreviated forenames J. H. could not be resolved, but Heinrich Hausmann announces the collection in the „Allgemeine Zeitung München" on 29.10.1825 and again in 1829 and beside the address Untere Pfarrgasse in Linz giving Josephstadt 180 in Vienna. Unfortuantely, nothing could be found on his identiy and no further publications are known. Writing under a pseudonym was common in that times, see for instance FLÜGEL (2007) concerning Ignaz von Born. The vocabulary used, viz the Latin as well as the German names, exactly matches the publications of BORN (1778, 1780) and Carl MEGERLE VON MÜHLFELD (1811). This at least suggests that Megerle between the purchase 1816 and the delivery of the printed catalogue prepared the manuscript.

In this context it is interesting that Carl Megerle founded "in order to bring a more lively traffic into the natural trade, but at the same time to curb the overstretched demands of the merchants" (translated and cited after SCHENKLING 1935), founded a special **auction institute** for natural products in 1798. It was situated in the building of the citizen hospital ("Bürgerspital") in Vienna and existed until 1806, when it was forbidden and closed down. Since 1801, Megerle has continuously published auction catalogs on insects, the details of which are given by SCHENKLING (1935). Apparently an (auction) catalog on molluscs from 1795 exists in the tresor of the Natural History Museum in Vienna, which could not yet bee seen to compare it with the handwritten index of Schlägl. Moreover, manuscript names have been used by famous malacologists such as Hartmann, Menke, Philippi, Porro, Rossmässler. Out of at least 161 unusual and strange generic names in our database, we identified *Chamaeleon*, *Costularia*, *Cucurbita*, *Cymatia*, *Gaffraria*, *Haustorium*, *Lunatica*, *Omphala*, *Orbitula* listed by SCUDDER (1882) as from "(**Megerle** MS. [manuscript])".

Based on the biographies summarised above and published as well as unpublished facts, we compared these data with names on the labels of the vouchers located in Linz (inventorised or not). The results of a first, by no means comprehensive test are presented in Table 6.

Comparing the "Hohenwart catalogue", viz Hausmann (1825), for instance the members of genus Patella, with taxa inventorised and databased from the collection of Schlägl the random examination reveals the following corresponding epithets, i.e. specific names, chinensis, equestris, fissura, fornicata, graeca, granatina, lutea, neritoidea, nimbosa, pectinata, testudinaria, vulgata. By the way all introduced by Linnaeus (1758), the system of whom was followed by Ignaz von Born.

The following taxa of Patella, out of more than 200 other species of diverse genera, are listed as "v. M.": P. pileus, polycostata, rudis, strigata, succineata in the handwritten "Schlägl index". Since no description was published, these are nomina nuda.

MEGERLE VON MÜHLFELD (1811) introduced the genus names *Angulus*, *Cardissa*, *Chione*, *Corbicula*, *Orbiculus*, *Trigonia*, undetermined specimens of these taxa were inventorised. Interestingly the Kuhn index of genus names from Ottobeuren (see page 637) lists three nomina, viz. *Poly(o)donta*, *Tapes* and *Trigon(i)a*, introduced by Megerle von Mühlenfeld. The new genus name *Polyodonta* by the way was based on *Arca nucleus* representing an objective synonym of *Nucula* Lamarck, 1799. In this context it take notice that most of the 19 species introduced in 1816 and 32 in 1824 seem to be ignored by later authors. Regarding the authorship of the handwritten index of Schlägl, it is remarkable that numerous transfers to the genus *Fissurella* BRUGUIÈRE, 1789 are listed, whereas *Patella barbadensis* has only be

Table 6: Provisional reconstruction of taxa linking specimens of Born, Hohenwart (HAUSMANN 1825, shortened to year below) and Megerle (MEGERLE VON MÜHLFELD 1811, 1816, 1824) formerly hosted in the monastery Schlägl and currently housed in the Linz mollusc collection. HISM — handwritten index of Schlägl [Megerle]; IN – inventory number of OLML; No. – number of example; v.M. — Megerle von Mühlfeld; ? — no current allocation known.

No.	Binomen	Source published	Source unpublished	Current allocation	Nomenclatural author
1	*Amalthea antiquata*		HISM	*Hipponyx antiquatus* (Linnaeus, 1767)	v.M. [new combination of Patella *antiquata*]
2	*Cardium latum*	1825	new IN?	*Papyridea lata*	Born, 1778
3	*Helix lapicida*	1825	IN	*Helicigona lapicida*	Linnaeus, 1758
4	*Nerita fluviatilis*	1825	IN	*Theodoxus fluviatilis*	Linnaeus, 1758
5	*Patella barbadensis*	1791	HISM IN as *Fissurella*	*Fissurella barbadensis*	Gmelin, 1791
6	*Patella chinensis*	1825	IN	*Calyptraea chinensis*	Linnaeus, 1758
7	*Patella equestris*	1825	HISM & IN	*Calyptraea equestris*	Linnaeus, 1758
8	*Patella fissura*	1825	HISM & IN	*Emarginula fissura*	Linnaeus, 1758
9	*Patella fornicata*	1825	HISM	*Crepidula fornicata*	Linnaeus, 1758
10	*Patella graeca*	1825	HISM & IN	*Diodora graeca*	Linnaeus, 1758
11	*Patella granatina*	1825	HISM & IN	*Cymbula granatina*	Linnaeus, 1758
12	*Patella lutea*	1825	new IN?	*Patella (Cymbula) compressa*	sensu Born, 1780 non Linnaeus, 1758
13	*Patella miniata*		HISM & IN	*Cymbula miniata*	Born, 1778
14	*Patella neritoidea*	1825	HISM	?	Linnaeus, 1758
15	*Patella nimbosa*	1825	HISM as *Fissurella*	*Fissurella nimbosa*	Linnaeus, 1758 as *Patella*
16	*Patella oculus*		HISM	*Cymbula oculus*	Born, 1778
17	*Patella pectinata*	1825	new IN?	*Siphonaria pectinata*	Linnaeus, 1758
18	*Patella pentagona*	1825	new IN?	?	Born, 1778
19	*Patella pileus*		HISM	?	v.M.
20	*Patella plicata*	1825	new IN?	*Scutellastra barbara* (Linnaeus, 1758)	Born, 1778
21	*Patella pustulata*	1825	HISM	*Eoacmaea pustulata*	Helbling, 1779
22	*Patella radiata*	1825	new IN?	*Cellana radiata*	Born, 1778
23	*Patella rudis*		HISM	*Fissurella nodosa* (Born, 1778)	v.M. [new combination?]
24	*Patella strigata*		HISM	?	v.M.
25	*Patella succineata*		HISM	?	v.M.
26	*Patella testudinaria*	1825	HISM	*Cellana testudinaria*	Linnaeus, 1758
27	*Patella vulgata*	1825	HISM	accepted	Linnaeus, 1758
28	*Chione* spp.	1811	new IN	accepted	v.M. [new combination]
29	*Turbo speciosus*	1824	new IN?	*Tricolia speciosa*	Megerle von Mühlfeld, 1824
30	*Turbo trochiformis*	1825	new IN?	*Trochita trochiformis*	Born, 1778
31	*Voluta castanea*	1816	HISM	*Melampus castaneus*	Megerle von Mühlfeld, 1816

introduced in 1791 by Gmelin. In any case the, both the handwritten index of Schlägl and the "Hohenwart catalogue" are quite incomplete.

The following patterns concerning naming are discernible in Table 6:

1. rarely the original spelling of a name including the introducing author and date is currently accepted as in examples No. 27;
2. the specific epithet, i.e. the second component of a binomen, is transferred to another genus either unchanged or with a varied (gender) ending as in examples No. 1–11, 13–17, 21, 22, 26, 29–31;
3. the species is considered as a subjectiv synonym of an earlier established taxon as in examples No. 12, 20, 23;

Fig. 56: Death notice of Karl Wessely

4. a nomenclaturally unavailable, viz. unpublished or undescribed manuscript name, is found as in examples 19, 24, 25;
5. an available binomen is simply forgotten and/or obscure, e.g. undeterminable by later authors as in examples 14, 18.

These observations strongly suggest in our opinion that the collection of the monastery Schlägl is an assemblage of specimens collected by Ignaz von Born, Maria von Born, Maria Anna von Österreich and Johann Karl Megerle von Mühlfeld. Exchange with and/or purchase from further persons of course are very likely. Already BRAUER (1878) reported that original Ignaz von Born specimens have been found under the duplicates and/or have been replaced by "better" exemplars. This author reported e.g. four-digit numbers used by Born and similar ones occur on our specimens, which have be compared in detail. The scientifically most important point is that **syntypes**, viz. specimens being the anchor of originally newly introduced species, of the two publishing authors, namely Ignaz von Born and/or Johann Karl Megerle von Mühlfeld may be elucidated in future.

Personal collections

The following biographical entries concern six men and two women (see also page 657–663 as regards Agnes **Bisenberger**), who have made significant, i.e. more than 1000 series, contributions to the Linz collections of and knowledge on molluscs. Their sequence is according to the year of birth. They are accompanied by lists of key dates in the scientist's lives and biographies of sources for further information. Cross-references to entries on other scientists appear in **bold** type. In different ways all exemplary personalities are united by their love for the by many people extraordinarely ambigously perceived gastropods and to a lesser extent bivalves.

Karl WESSELY (1861–1946)

Karl Wessely's (Fig. xy) life was guided by a varied and in-depth scientific education according to HAMANN (1951). Born on September 2, 1861 in Linz, he graduated in 1878 from the secondary school in Salzburg and then studied at the German technical college in Prague. It was not until he was a mature man that his enthusiasm for education led him to further studies at the Technical University in Vienna. At the same time he took the subjects of chemistry and science at the faculty of philosophy of the University in Vienna. Well-known scholars such as Karl Grobben, Carl [Friedrich Wilhelm] Claus and Richard von Wettstein influenced his further development there, and studies at the Natural History Museum Vienna completed his knowledge. Later, he was in touch with Father Anselm **Pfeiffer** from the monastery Kremsmünster (Upper Austria).

After military service Wessely began his professional life as a chemist at the company Victor Adler in Vienna, continued his practice with J. John Rustow in Swijan-Podol (Czech Republic) until 1896 and then was gasworks manager in Wels until 1899 and finally director of the gas plant in Bielitz-Biala until 1903. After this time, he began his teaching profession first as a trial candidate at the secondary modern school in Linz, later as a teacher at the commercial college there, where he worked until his retirement in 1934. He taught in the subjects zoology and botany, chemistry, chemical technology and product knowledge. Despite the large claim in the college and with the exception of the last two years of World War II, WESSELY worked since his arrival in Linz countless hours in the Upper Austrian Museum on the mollusc and also lumbricid collections until his death on January 26, 1946 in Steyr.

In 1905 WESSELY founded faunistics and the first collection of lumbricides in Austria (AESCHT 2003 and references therein). It is very likely that he also prepared the microscopic slides (94 of annelides and 69 of molluscs) found in the Linz collection. He also provided a basis for a collection of photographs and glass negatives (KERSCHNER 1922: XVI, 1930: 31). HAMANN (1951) speaks of a few thousand negatives, some colored slides and positives from the fields of botany, plant sociology, technology, paleontology, mineralogy, geology and zoology, which are still awaiting processing and evaluation.

Miss Dr. Emma Wessely, his daughter and professor of zoology and botany, has posthumously annotated and published a manuscript by Karl Wessely from 1945 on changes in the fauna (above all birds) and flora of

Upper Austria, printed in the "Jahrbuch des Oberösterreichischen Musealvereines" (JOOM; WESSELY 1963).

Wessely's collection embraces 1237 series collected in Upper Austria between 1903 and 1958.

Josef GANSLMAYR (1872–1950)

Josef Ganslmayr was born on May 10, 1872 in Laussa near Steyr (Upper Austria) and underwent teacher training in Linz after graduating from the convent school in the monastery Kremsmünster. Probably inspired by Anselm **Pfeiffer**, he collected and studied land and freshwater molluscs.

In 1935 Ganslmayr published an overview on molluscs of the whole province. According to his own information, he had been dealing with molluscs intensively since about 1927 and was in contact with the mollusc researchers David **Geyer** (Stuttgart), Ewald **Frömming** (Schwanbeck, Niederbarnim), Ämilian **Edlauer** (Vienna), Anton **Fuchs** (Vienna), Franz **Käufel** (Vienna), Walter **Klemm** (Vienna), Hans **Schlesch** (Copenhagen) and Stephan **Zimmermann** (Vienna), who confirmed his first record of *Daudebardia* spp. from Upper Austria (GANSLMAYR 1935: 50).

On March 25, 1950, Ganslmayr suffering from cancer ended his life by suicide (GUSENLEITNER 1983: 143). The Viennese zoologist Martin HAASE named a new snail *Belgrandiella ganslmayri* in his honor in 1993. This species in endemic bordering the provinces Upper Austria and Styria and listed as critically endangered (AESCHT & BISENBERGER 2011).

Pertaining to the year 1952, HAMANN (1953: 42) announced a very valuable enrichment of the invertebrate department resulting from the purchase of the mollusc collection from the estate of senior teacher i. R. Josef Ganslmayr (about 1400 vials of Upper Austrian species, the rest European material), including important literature. The former contained about 2400 self-collected (though mostly undated) series largely from the surroundings of his homevillage Weyer, about 500 he got from the persons mentioned above. Exchange with Zimmermann being the most intense; more than 200 series returned to Linz, when his collection was purchased in 1942. The literature emphasised refers to two anthologies of 22 and 35 reprints, respectively by malacologists from the 1930s.

Stephan ZIMMERMANN (1896–1980)

The following information is based on a curriculum vitae personally written by Stephan Zimmermann, kindly provided by Dr. Helmut **Sattmann**, Director of the 3rd Zoological Department at the Natural History Museum in Vienna. Zimmermann was born on October 27, 1896 in Kuttenberg (Bohemia). He attended schools in Graz, Klagenfurt, Agram [Zagreb, how Croatia], Vienna (Theresianum), Bolzano [Italy], Lemberg [now Lwow, Poland] and Linz, where he passed his maturity exam in 1915 at the State Gymnasium. In 1915 he joined the Howitzer Regiment Nr. 3 in Linz as a volunteer and was at the front from December 1915 until February 1918 without interruption. In 1918 he began to study medicine at the University of Vienna, but also attended general and zoological lectures. Zimmermann attained a doctorate on 8 July 1923 to the doctor of total medicine in Vienna and was from 1923 to 1926 surgeon of the first university eye clinic, from 1926 to 1929 assistant to the ophthalmology department of the Rudolf Hospital in Vienna and from 1928 ophthalmologist. Since 1922 Zimmermann, inspired by Dr. R. **Sturany**, has been studying molluscs at the Natural History Museum in Vienna. Zimmermann was a correspondent of this since 1930 and died on 4 July 1980.

Fig. 57: Photograph of Walter Klemm from the Fritz Seidl collection.

Being in contact with **Ganslmayr** and **Elser** (ZIMMERMANN 1932: 4) and mediating the determination, especially the clausilids, by Dr. Franz **Käufel**, a corre-

Fig. 58: Original drawer of Ernst Mikula.

spondent of the Natural History Museum in Vienna, likely (nearer circumstances are not documented) Zimmermann became also accquainted to Theodor **Kerschner** and Karl **Wessely**. Anyhow in 1930 in honor of Kerschner, Zimmermann described *Horatia erythropomatia kerschneri* from source channels of the water pipe in Weyer on the Enns, which was transferred to another genus and raised to species status by the zoologist HAASE (1993) as *Hauffenia kerschneri*.

Two further papers concern mollouscs: in honour of Anton Fuchs (see page pxy) he introduced Orcula fuchsi (Fig. 70k) in 1931. A 56-paged work in 1932 described mostly forms, morphs and aberations of this genus, which are however nomenclatually unavailable, such as O. conica "minor" fue to their infrasubspecific status. Some have been made available as subspecies by later authors, ev.g. O. dolium edita, O. d. infima and O.

Fig. 59: Card-index boxes of Ernst Mikula.

gularis orneia by Ehrmann in 1933 as well as O. dolium raxae and O. austriaca goelleri by Gittenberger in 1978 (see Harl et al. 2011 for references). Zimmermann's subspecies O. spoliata austriaca was elevated to species rank and is now the nominotypical taxon of O. austriaca austriaca. Nevertheless, syntypes designated in the above cited work and located in the Linz and Frankfurt collections were collected by Zimmermann and a subsequent lectotypification can be performed.

In May 1942, the museum purchased (3,600 "Reichsmark") the gastropod collection from Stephan Zimmermann with 6335 locality records according to KERSCHNER (1944). Highlighted in the inventory book „important is a special collection of the genus *Orcula* from the areas between Salzach, Enns and Danube"; 12 paratypes and 28 locotypes, are particularly mentioned.

Zimmermann's gathering contains 3240 series, largely undated, the earliest dated in 1910. 1763 series are recorded as sampled by himself, consequently a large proportion had been gained by exchange with other malacologists.

Walter KLEMM (1898–1981)

Walter Klemm (Fig. 57) was born on 4 August 1898 in Olmütz in northern Moravia, the son of an official of the Habsburg Monarchy. He attended college there and in 1916, still as a student, was called to the military service. He passed his maturity in 1917 on a study leave. After the end of the World War I Klemm moved to Vienna with his parents. In 1919 he found employment in the civil service; three years later, he was pragmatically accredited. However, the hard post-war period prevented him from realizing his intention to study at the university. Soon he became a member of the Zoological and Botanical Society and found access to the Viennese circle of zoologists, among whom Rudolf Sturany, who turned his interests to the molluscs. With increasing knowledge, he specialized in the Palaearctic land and freshwater snails. After the death of Hofrat Sturany, the center of Austrian mollusc science shifted more and more to Klemm, whose special collection had grown to more than 70,000 catalogue numbers with more than two million specimens, making it one of the most important of its kind, now situated in the Natural History Museum in Vienna (ESCHNER 2018; see also KREISSL 1978). Many references are already contained in the ZOBODAT (MALITZKY et al. 2013]. Klemm was married twice; he had no children, retired in 1959 and died on May 20, 1981 in Vienna.

The 1960 edition of molluscs for the Catalogus Faunae Austriae, the first summary of the mollusc fauna of today's Austria, was an important step in Austrian mollusc research. The culmination of his work, however, is

his 503-page work on the dissemination of the recent land-snails Austria (ESCHNER 2018). In total Klemm described in his 37 malacological publications a subgenus and 37 new species or forms. Initially intended only as compensation, Klemm published in part together with Helmut **Hamann** from Upper Austrian Museum between 1953 and 1976 five works on ants. He became a correspondent of the Natural History Museum in Vienna and a honorary member of the Zoological and Botanical Society in Vienna, the Zoological Society in Braunau am Inn, with whom he enjoyed close, even friendly relations over a span of two decades, especially with Fritz **Seidl** (see page 650ff.) and the German Malacological Society. In March 1969 he received his doctorate in honor of his malacological work as honorary doctor of the University of Vienna. Fifteen authors have so far named nearly thirty species and subspecies as well as two genera in honor of Klemm.

HAMANN (1969) mentioned that the neccessary revision of the large collection of Upper Austrian and European snails and mussels (excluding the marine species) for the main was mastered by Mr. Klemm in an eight-day stay in the State Museum around 1965.

Klemm gave 231 series between 1931 and 1957 an LM, revised more than 400 (if not nearly 4000) determinations of **Ganslmayr** and **Zimmermann**, **Seidl** as well as of **Frank**. 430 series are recorded as self-collected. Klemm compiled a comparative collection of 146 snail species for Upper Austria, kept by the entomologist Josef Gusenleitner, who donated it to the Biology Centre in 1998.

Ernst Mikula (1900–1970)

Ernst Mikula was born on November 3, 1900 as son of a railroad official in Vienna. He attended the secondary school in the 7th district of Vienna and after graduation another textile school. In the following years he worked for professional private companies. In 1938 Mikula went into civil service and retired in 1965 as secretary of finance. Since his youth he had a special fondness for animals, probably awakened by his natural history teacher in college, the well-known staphylinid researcher Otto **Scheerpeltz**. Mikula was the last Viennese malacologist, who was still working in the activity of Hofrat **Sturany** at the Natural History Museum in Vienna. In his quiet, modest manner, Mikula found much pleasure in his preoccupation with molluscs, and did not demand external acknowledgment. He died March 17, 1970 in Vienna (KLEMM 1970).

Only a small but well-founded publication is available: „*Trochulus hispidus* ***scheerpeltzi*** n. subsp." (MIKULA 1957; Fig. 74r). Mikula had a special liking for mussels and slugs. He had a lot of skill in abrading and photo-

Fig. 60: Four of many shell cuttings made by Ernst Mikula.

Fig. 61: A radula preparation of *Succinea pfeifferi* made by Ernst Mikula.

Fig. 62: Photograph of Fritz Seidl, kindly provided by his son.

Fig. 63: Original chest of Fritz Seidl as reconstructed in the depository Lindengasse.

Fig. 64: One of the original 650 drawers of Fritz Seidl covered by blue velvet.

graphing shells (Fig. 60). Thus, the illustrations in the report on the Iran Expedition **Starmühlner** 1957 were made by him. KLEMM (1970) reports that in 1970 beautiful nudibranch watercolors by Mikula were installed in the molluscan exhibition in the Natural History Museum in Vienna in the overview of the molluscs of Austria.

Mikula gave more than 5000 series to Fritz Seidl, partially in systematically ordered in drawers, which are subdivided by wooden blocks with handwritten titles and accompanied by a chronological and taxonomic handwritten card catalogue (Fig. 58, 59). The first self-collected sample is from 1925. Particularly noteworthy in his collection are series of love arrows and radules, which are prepared and kept in an original and attractive way (Fig. 61).

Fritz Seidl (1936–2001)

Prof. Fritz Seidl (Fig. 62) was born on 17 August 1936 in Braunau am Inn (Upper Austria), completed a double apprenticeship as a varnisher and saddler in the parental company in Braunau (1951–1955) and 1957/58 additionally a commercial apprenticeship. He worked as a journeyman (1956) and commercial employee in the parent company (1959–1980), which had meanwhile specialized in furniture production and sales. From 1980–2001 the focus was laid on commercial leasing of company's land holdings in Braunau.

His father Fritz [Friedrich] Seidl (1908–1983), called Seidl I or senior, laid the ground for his interest in nature (REICHHOLF 1985). Seidl investigated gastropods, to a lesser extent bivalves, as a sideline and completed his knowledge so far that he was considered one of the most competent specialists (jokingly also referred to as „Schneckologe" [**snailologist**] Anonym 2001: 113) for the species identification of molluscs throughout Central Europe. A highlight of his scientific work may well have been the annual meeting of the German Malacological Society in **1972** the participants (or members) of which remembering with pleasure the excursions to the Innauen and the valley slopes near Braunau (Anonym 2001: 114). Between 1962 and 2000 he carried out about 40 major collection journeys (with a focus on SE-Europe, the Near East, N- and W-Africa, Sri Lanka, Mauritius (Tab. 7) with great private financial effort and built his private collection in an exemplary manner. He was married to Erika (until 1993) and father of two children, Friedrich and Wolfgang, all of them also contributed as (co-)collectors. He died on 8 July 2001.

Seidl had been a scientific consultant for Upper Austria since 1991. In 1993, he was appointed the title "Professor" by the Provincial Government, and he is one of the bearers of the Golden Merit Medal of the city of Braunau. He was the founder (January 6, 1962), chairman (1962–1987) and then honorary chairman, of the "Zoologische Gesellschaft Braunau" [Zoological Society Braunau]. Since the late 1960s, he led its maga-

Table 7: Collection journeys of Fritz Seidl sorted by date.

1.5.–14.5.1969 former Yugoslavia	2.12.–15.12.1984 Togo, Benin, Ghana
22.5.–5.6.1970 former Yugoslavia	6.2.–21.2.1986 Mauritius
3.1972 Denmark	7.9.–10.9.1986 Hungary
13.7.–27.7.1973 former Yugoslavia	4.1988 Tunisia
6.7.–20.7.1974 Greece	9.6.–23.6.1988 Morocco
3.5.–18.5.1975 Turkey	17.–22. 4.1989 Tunisia
6.7.–20.7.1975 Greece	30.3.–08.4.1991 Cyprus
11.4.–21.4.1976 Irak, Syria	26.2.–13.3.1992 Sierra Leone
7.7.–20.7.1976 former Yugoslavia, Greece	11.5.–19.5.1993 Morocco
10.7.–24.7.1977 Greece	8.3.–16.3.1994 Morocco
9.7.–23.7.1978 Greece	25.12.–06.1.1995 Camerun
22.8.–27.8.1980 former Yugoslavia	5.12.–13.12.1995 Morocco
12.2.–27.2.1983 Togo	22., 23.7.1996 Tunisia
4.7.–12.7.1983 Togo	10.3.–17.3.1998 Morocco
9.12.–23.12.1983 Gambia, Senegal	2.5.–10.5.1999 Greece
1.8.–13.8.1984 Ivory Coast	30.4.–16.5.2000 Greece

zine, the „Mitteilungen der Zoologischen Gesellschaft Braunau" [Notices of the Zoological Society Braunau] to a widespread journal, even reaching America and Japan.

Between 1960 and 2001 Seidl published nearly 90 articles in regional and German scientific journals (see page 676ff). Predominantely single-authored, he co-authored papers with Axel Beutler, who had a monitoring and ecoplanning institute in Munich (1981a, b, 1983a, b, 1984, 1985, 1986), M. Colling (1986), the ornithologist Georg Erlinger (1968b, 1974), the malacologist Peter L. **Reischütz** (1972, 1982), the famous zoologist Josef **Reichholf** (1974, 1992), the ecologist Franz Essl, the botanist Peter Prack and the entomologists Werner Weissmeier & Erich Hauser (1997, 1998, 1999) as well as with his sons Friedrich, called the "III" (Seidl F. & F. III. Seidl 1983, 1998), and Wolfgang (Seidl F. & W. Seidl 1997, 2000).

His broad general zoological knowledge was not only seen at a young age with the attitude towards turtles, birds, scorpions, rats, amphibians and ants (Seidl 1960–1964e, 1968b, 1972b, 1987b), but also in the publication of the first evidence of the wasp spider *Argiope bruennichi* in Upper Austria (Seidl 1992). Some publications concern biographical notices (1975, 1982c, 1987d) and the edition of the travel journal of Rudolf **Sturany** to Crete (1978c) provided by Walter Klemm. Other publications regard cultivation and preparation methods for freshwater and terrestrial mollucs as well as other animals (1961a, 1962a, 1968b, 1979, 1981c).

Beside observations on *Achatina marginata* (1961a), Seidl's first malacological paper reported on an excursion to Carynthia and East-Tyrol (Seidl 1968a). This was followed by many observations on the behaviour, development and occurrence of specific mollusc species (1968a, 1971a, 1976, 1977a, b, 1978a, b, 1980, 1981a, b, 1982a, 1983, 1984, 1987c, 1989, 1990a, 1994a, 1998b, c; Seidl & Colling 1986; Seidl F. & W. Seidl 1997, 2000), including first records (1974, 1992, 1998d; Seidl F. & Seidl F. [III] 1998). Seidl (1990a) recorded the size world record of some species. He performed extensive investigations of the community structure of molluscs in diverse districts of Upper Austria (1969, 1971b-c, 1972a, 1973, 1993b, 1995, 1996, 1998a, 2000, 2005, the latter was posthumously edited by Robert Krisai; Reischütz & Seidl 1972; Seidl F. & F. [III.] Seidl 1983; Essl et al. 1997a, b, 1998; Hauser et al. 1999)

Fig. 65: Original drawer of Fritz Seidl including paratype series each marked by a red pinpoint. The formula on this drawer for example means chest 4, door 1 and drawer 20.

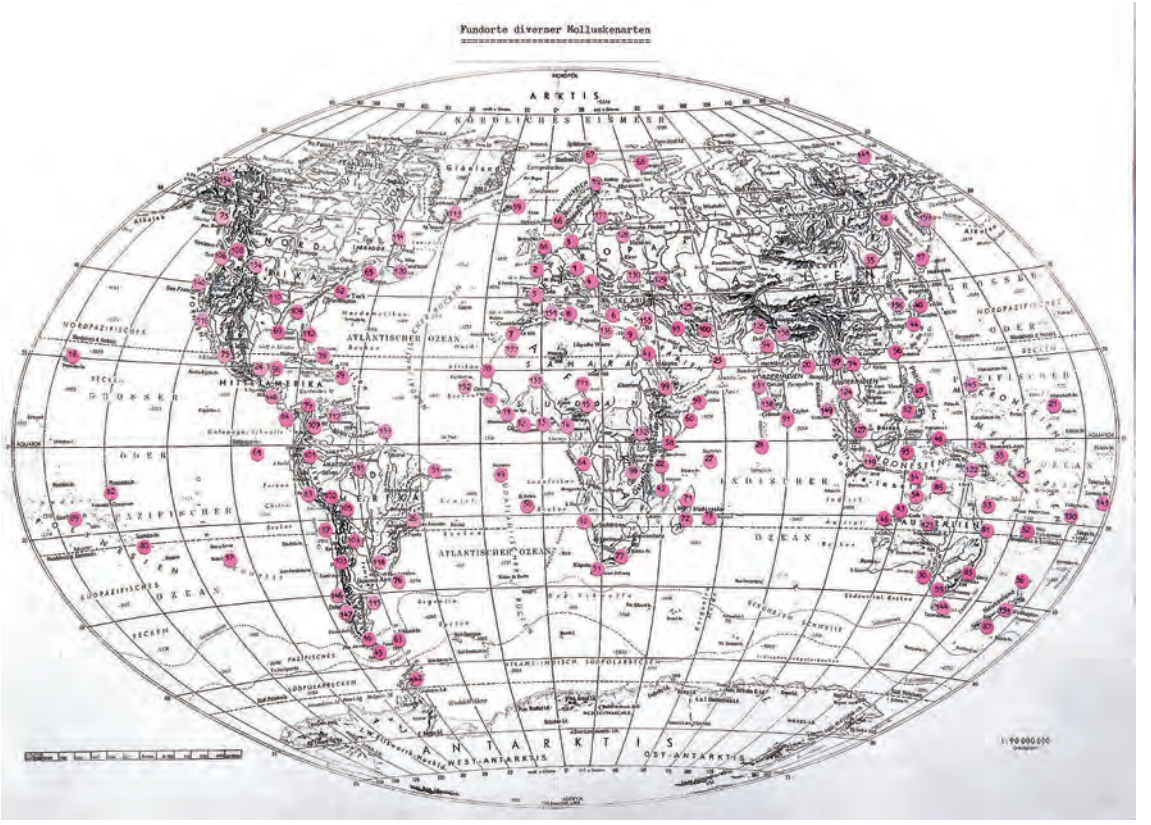


Fig. 66: Map of the world in the Fritz Seidl collection, where places of origin of his mollusc specimens are marked by red pinpoints.

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Coll. fSj Nr.	Art	Fundort	Land	erhalten von	Datum der Eintragung	Anmerkung
12 581	Discus (Discus) perspectivus (M.v.MÜHLFELD)	Mischwald mit Quellen südl. oberh. v. Guffilham (leg. 10. Okt. 1974)	Oberbayern	ipse	17.9.1974	
12 582	Spixia claviformis WEYRAUCH	Prov. Córdoba, 12 km von Villa de Soto, s.d. Autostraße n. Cosquin (leg. 25.12.1967)	Argentinien	Weyrauch	"	Paratypen
12 583	Spixia pseudosexdentata (DÖRING)	Prov. Santiago del Estero, km 930-931 s.d. Autostraße v. Tucumán n. Córdoba (leg. 67)	"	"	"	
12 584	Spixia pyriformis (PILSBRY)	Prov. Salta, Cerro Colorado, 650-750 m	"	"	"	
12 585	Spixia philippii (DÖRING)	Prov. Córdoba, Estancia La Fronda, 13 km v. San Marcos Sierras (leg. 25. Dez. 1967)	"	"	"	
12 586	Spixia sylvaevaga WEYRAUCH	Prov. Córdoba, schattige Waldschlucht bei Capilla del Monte (leg. 24.12.1967)	"	"	"	Paratypen
12 587	Spixia doellojuradoi (PARODIZ)	Prov. Córdoba, 16 km von Cosquin, s.d. Autostraße n. Villa de Soto (leg.25.12.67)	"	"	"	
12 588	Phenacotaxus (Phenacotaxus) turritus WEYRAUCH	Cerro Huaillacollo, Rio Urubamba, an der Autostr. v. Urubamba n. Calca (leg.13.1.69)	Peru	"	18.9.1974	Paratypen
12 589	Phenacotaxus (Phenacotaxus) corneus WEYRAUCH	am Fuß des Cerro Huachulla, Hacienda Ninabamba, im Tal d. Rio Pampas (leg.31.1.69)	"	"	"	Paratypen
12 590	Phenacotaxus (Phenacotaxus) infundibulum infundibulum (L.PFEIFFER)	auf d. rechten Seite d. Rio Pampas, 6 km v. d. Brücke über d. R. Pampas (leg.31.1.69)	"	"	"	
12 591	Phenacotaxus (Phenacotaxus) infundibulum perforatus (HAAS)	am Fuße d. Cerro Huachulla, Hacienda Ninabamba, link.Seit.d.Rio Pampas (leg.30.1.69)	"	"	23.9.1974	
12 592	- " -	Ninabamba, Rio Pampas, 1900 m, zwischen Andahuaylas und Ayacucho	"	"	"	10 & 5 juv. aus der Originalserie!
12 593	Phenacotaxus (Phenacotaxus) scalarioostata (MORELET)	Cerro Yahuarmaqui, auf d.link.Seite d.Rio Urubamba, gegenüber Urubamba (leg.13.1.69)	"	"	"	
12 594	Phenacotaxus (Ataxellus) urubambensis WEYRAUCH	3-4 km von Calca, s.s. Autostraße nach Pisac, s.d.recht.Seit.d.Rio Urubamba	"	"	"	Paratypen
12 595	Cepaea (Cepaea) nemoralis nemoralis (LINNAEUS)	Mauer d. Gartens v. Tierarzt Dr. Post in Schönau (bei Eggenfelden) (leg.10.9.74)	Niederbayern	ipse	"	
12 596	Helix (Helix) pomatia pomatia LINNAEUS	Schloßpark in Schönau (bei Eggenfelden) (leg. 10.9.1974)	"	"	"	
12 597	Discus (Discus) rotundatus rotundatus (O.F.MÜLLER)	- " -	"	"	"	
12 598	Aegopinella ressmanni (WESTERLUND)	Mischwald bei Berging, Gemeinde Stubenberg, Landkr. Rottal-Inn (leg. 8.9.1974)	"	"	24.9.1974	Zweiter Nachweis für Deutschland!
12 599	Perforatella (Monachoides) incarnata incarnata (MÜLL.)	Mischwald bei Berging, Gemeinde Stubenberg, Landkr. Rottal-Inn (leg. 15.9.1974)	"	"	"	
12 600	Cepaea (Cepaea) hortensis hortensis (O.F.MÜLLER)	- " -	"	"	"	

Fig. 67: One page of the typewritten original collection catalogue of Fritz Seidl. Note that paratypes, here of Weyrauch, are marked in red.

and in the town of Linz (1985a, 1987a, 1990b-d, 1994b, 1997). Unpublished reports concern monitoring near atomic power plants in Germany (1981a, b, 1982b, 1983, 1985b, 1986; SEIDL & BEUTLER 1983a, b, 1984, BEUTLER & SEIDL 1986).

With an estimated amount of more than one million specimens and currently 42,110 recorded series, Prof. Seidl created within 30 years one of the largest Austrian private collections of snails and shells: The specimens are stored in 650 drawers in four of his own

constructed store chests (17 meters in total) embracing 24 doors. The series have been largely catalogued by himself beginning on 12 January 1969; the last series number 38,130 dates from 6 April 2001; Fig. 67). There is also a large subject-specific library with 287 books and more than 2800 reprints – a true cultural achievement. Also included is a historical collection (before 1884) from the Benedictine Abbey of **Ottobeuren** (received on 22 September 1984 by Father Aegidius Kolb) and parts of the „**Klemm** Collection", which was already famous in the 1960s (KREISSL 1978: 113; 75). Seidl also took over the complete collection of Dietrich von der **Horst** (1602 series) and Ernst **Mikula** (more than 5000 series). The largest specimen is a giant clam with 82 cm length, 52 cm width and 22 cm height. Among the reprints is also an unpublished manuscript by Walter **Klemm** on collection results in Upper Austria in 1946. The correspondence and journey notes are kept by the descendants and partially published (SEIDL F. [III] 2002). The Seidl collection was relocated to the depot Lindengasse in May 2003 and re-installed in the original store chests.

More than 30,000 of the currently 42,110 recorded series have been donated or exchanged by and with malacologists, respectively, corresponding to one third self-collected samples.

Christa FRANK (married FELLNER) (*1951)

Christa FRANK, born in 1951 in Styria, is renowed under this family name. She completed her doctorate at the University of Graz with a dissertation on blood parasites of small alpine mammals (July 1973) and habilitated at the University of Vienna with a comprehensive work on the mollusc fauna of the Austrian Danube valley and its major tributaries (May 1991). In September 2006, the title of „University-Professor" was awarded and in September 2013 she retired.

During the academic years research assistant at the Institute of Parasitology in Graz, after receiving her doctorate at the Anatomical Institute in Graz; furthermore at the Biological Institute Lake Neusiedl and in the pharmaceutical industry (serology); from 1987 until retirement as lecturer at the Institute of Zoology, Paleontology and Anthropology of the University of Vienna. During this time, she supervised numerous diploma theses and dissertations (Mauser 1991, Maria Stefke 2001, Pilat 2002, Achsnit 2003, Innocente 2003, Pesendorfer 2003, Stadler 2003, Koelly 2005) with parasitological and malacological topics.

Dr. Frank received the Recognition Award of the Lower Austrian Government for Science (1986) and the R. Liepold Prize of the International Association for Danube Research (1988).

Fig. 68: Gerhard Fellner and Christa Frank (married Fellner) during a visit in the Biology Centre in 2019. In the construction behind them large gravepine snails are cultivated during the exhibition "Extend the feelers!".

Fig. 69: Christa Frank made comprehensive morphometric studies on *Helix pomatia*, which are stored upon the chests in the depository Lindengasse.

Main fields of work are faunistics and quaternary malacology; this resulted in well over 280 publications, including very extensive ones. Of special note is the two-volume monograph on the Plio-Pleistocene and Holocene molluscs of Austria (2006).

Since 1975 Frank published more than 280 articles in regional and German scientific journals (see page 669–676). The autorship „Frank-Fellner" is no true double name (e.g. 2013, 2014, 2015a-e, 2016), because as married wife she is called **Fellner**, but kept Frank, the better known denotation among malacologists (2015, 2016a-f, 2017a, b, 2018a-e).

Predominantely single-authored, she **co-authored parasitological** papers (on sporozoans and/or helminths)

Table 9: Collection journeys by Christa Frank (married Fellner) sorted by date. The ranges given (not necessarily collecting dates) for about 90 journeys (since 1998 with her husband Gerhard Fellner) may help to verfy undated data sets. E – East, SE – Southeast.

3.–15.6.1969 Greece	13.–17.1.1990 Grenada, Lesser Antilles	13.–20.9.2010 Turkey
3.1970 Spain	20.–22.1.1990 Trinidad and Tobago	7.–21.2.2011 Cuba
4.1970 Norway	25.–7.1.1990 Guadeloupe	3.–7.3.2011 Italy
10.–11.1970 India	30.1.–23.2.1990 Dominica	19.–26.4.2011 Italy
17.11.–27.12.1970 Sri Lanka	6.–10.1990 E-Alps	3.–10.9.2011 Bulgaria
5.–13.5.1971 Greece	11.–12.9.1990 Liechtenstein	20.–25.9.2011 Turkey
13.–24.7.1972 Greece	9.–12.9.1990 Saint Lucia	10.–14.2.2012 Spain
4.1973 Croatia	22.12.1990–10.1.1991 Dominica	5.–19.4.2012 Dominican Republic
5.1973 France	3.–15.1.1991 Montserrat	9.2012 Tunisia
6.1974 Slovenia, Croatia	15.12.1991–5.1.1992 Martinique	7.–8.12.2012 Turkey
10.1976 India	8.–9.1991 United States of America	12.–26.2.2013 Dominican Republic
[7.–8.1977 Turkey]	18.–28.4.1992 Martinique	9.–23.9.2013 Greece
10.–15.4.1978 Greece	7., 9.1992 E-Alps	5.–18.3.2014 Dominican Republic
7.1978 Tunisia	6., 8.–9.1993 E-, SE-Alps	11.–14.5.2014 Italy
[8.1978 Romania]	11.–15.8.1993 Italy	11.–5.2014 Italy
4.–15.7.1980 Belgium and Luxembourg	9.8.1994 Germany	11.–21.9.2014 Greece
3.–18.8.1981 Greece	25.–28.12.1996 Greece	9.–19.12.2014 Slovakia
4.–18.7.1982 Greece	1.–16.4.1998 Dominican Republic	9.–22.1.2015 Cuba
10.1982 Hungary	8.1998 Greece	12.–22.4.2015 United States of America
29.4.–13.5.1983 Tunisia	4.1999 Madagascar, Kenya, Tanzania	20.–23.5.2015 Croatia
2.7.1983 Italy Gardasee	4.–19.8.1999 Greece	6.–14.10.2015 Czech Republic
1.–15.9.1983 Greece	15.9.1999 Poland	6.–7.10.2015 Germany
[9.1983 Slovenia, Croatia]	9.1999 Turkey	9.–16.09.2015 Turkey
9.–10.1983 Hungary	4.2000 Portugal	12.2015–1.2016 Italy
16.1.– 27.2.1984 Ecuador	22.–24.6.2000 Norway	3.–16.3.2016 Dominican Republic
31.5–2.6.1984 Spain	15.–20.9.2000 Turkey	3.–16.5.2016 United States of America
4.5.–1.6.1984 Greece	12.2000 Italy	5., 9.2016 Hungary
11.1984 Kenya	11.–20.9.2001 Turkey	8.–22.9.2016 Greece
4.,7.,9.,10.1984 Hungary	23.3.–6.4.2002 Dominican Republic	23.–26.10.2016 Slovakia
10.1984 Hungary	2.2003 Malediven	15–28.2.2017 Dominican Republic
2.1986 Philippines	17.–20.4.2003 Spain	21.–30.3.2017 Italy
6.–11.4.1986 Tunisia	24.8.–8.9.2003 Greece	15.–19.5.2017 Armenia
6.1986 Nepal	2.2004 United Arab Emirates	26.–28.5.2017 Hungary
10.4.–3.5.1987 Greece	29.–31.5.2004 Portugal	11.–16.7.2017 Germany
7.–16.8.1987 Croatia	1.–18.7.2004 Italy	16.–30.9.2017 Tunisia
2.–4., 8.1988 E-Alps	13.–28.2.2005 Cuba	12.2017–3.1.2018 Italy
22.–29.7.1988 Croatia	13.–19.8.2005 Bulgaria	2.2018 Mauritius
19.–21.7.1988 Slovenia	11.–26.2.2006 Mauritius	4.2018 Germany Hamburg
21.4.–15.5.1989 Greece	6.–8.9.2007 Turkey	6.2018 Hungary
19.–22.7.1989 Saint Lucia, Martinique	9.–24.2.2008 Dominican Republic	9.2018 Greece
4., 7.–8.1989 E-Alps	6–13.9.2008 Turkey	10.–11.2018 Israel
3.–5.1.1990 Martinique	6.–21.2.2009 Dominican Republic	
13.–15.1.1990 Saint Vincent and the Grenadines	11.–18.9.2009 Turkey	
	31.1.–14.2.2010 Dominican Republic	

Fig. 70: Specimens of significant (sub)species occuring in Austria collected by main contributors to the mollusc collection in Linz: a – *Alzoniella hartwigschuetti*, leg. Frank Ch.; b – *Balea biplicata chuenringorum*, leg. Seidl F.]; c – *Bythinella austriaca*, leg. Seidl F.; d – *Euglesa amnicum*, leg. Frank Ch.; e – *Euglesa nitida*, leg. Frank Ch.; f – *Gyraulus albus*, leg. Frank Ch.; g – *Lithoglyphus naticoides*, leg. Wessely K.; h – *Orcula conica minor*, leg. Gallst.? ex coll. Zimmermann; i – *Orcula dolium edita*, leg. Zimmermann; j – *Orcula dolium intima*, leg. Zimmermann; k – *Orcula fuchsi*, leg. Zimmermann; l – *Orcula gularis reducta*, leg. Elser H.]; m – *Theodoxus prevostianus*, leg. Elser H

with Wolfgang Frank (1976), Martin Grassberger (2003a, b), Franz Jirsa (2008a, b, 2009, 2010), Robert Konecny R. (2008a, 2009, 2010), Monika Leodolter-Dvorak (2008b), Regina Krachler (2008b), J. Michael Mühlegger (2009), Helmut Sattmann (2009), Oskar Schachner (2009), Bernd Sures (2010); **paleontological** ones with Gernot Rabeder (1994, 1996a-c, 1997a-u), G. Kunst (1995), Jirí Mlikovsky (1995), Karl Rauscher (1995), G. Reiner (1995), Adolf Papp (1996), Gerhard Withalm (1997), C. Reisinger (1997), Doris Döppes (1997a-d), Florian A. Fladerer (1997a-i), Doris Nagel (1997a-d, 1995, 1997), Thomas Einwögerer (1998), Gerhard Fuchs (1998), Damm B. (2011), Frechen M. (2011), Robert Peticzka R. (2011), Christine Thiel (2011, 2012), Birgit Terhorst (2011, 2012), D. Homolová (2012), P.R. Nigst (2014), Paul Haesaerts (2014), Freddy Damblon (2014), Carolina Mallol (2014), Bence Viola (2014), Michael Götzinger (2014), L. Niven (2014), Gerhard Trnka (2014), J.-J. Hublin (2014). **Co-authors** in **malacology** have been Hans D. Boeters, Heuss K., Gerhard Habermehl, Doris Müller (1985), Ragnar Kinzelbach (1986), Jürgen H. **Jungbluth** & Andor **Richnovszky** (1990), Peter L. **Reischütz** (1991, 1994), Anatoli A. **Schileyko** (1994), Eike Neubert (1996), Andrzej **Wiktor** (1997), Rajko Slapnik (1997), Adolf **Riedel** (1997), G. Thomas Watters (2017).

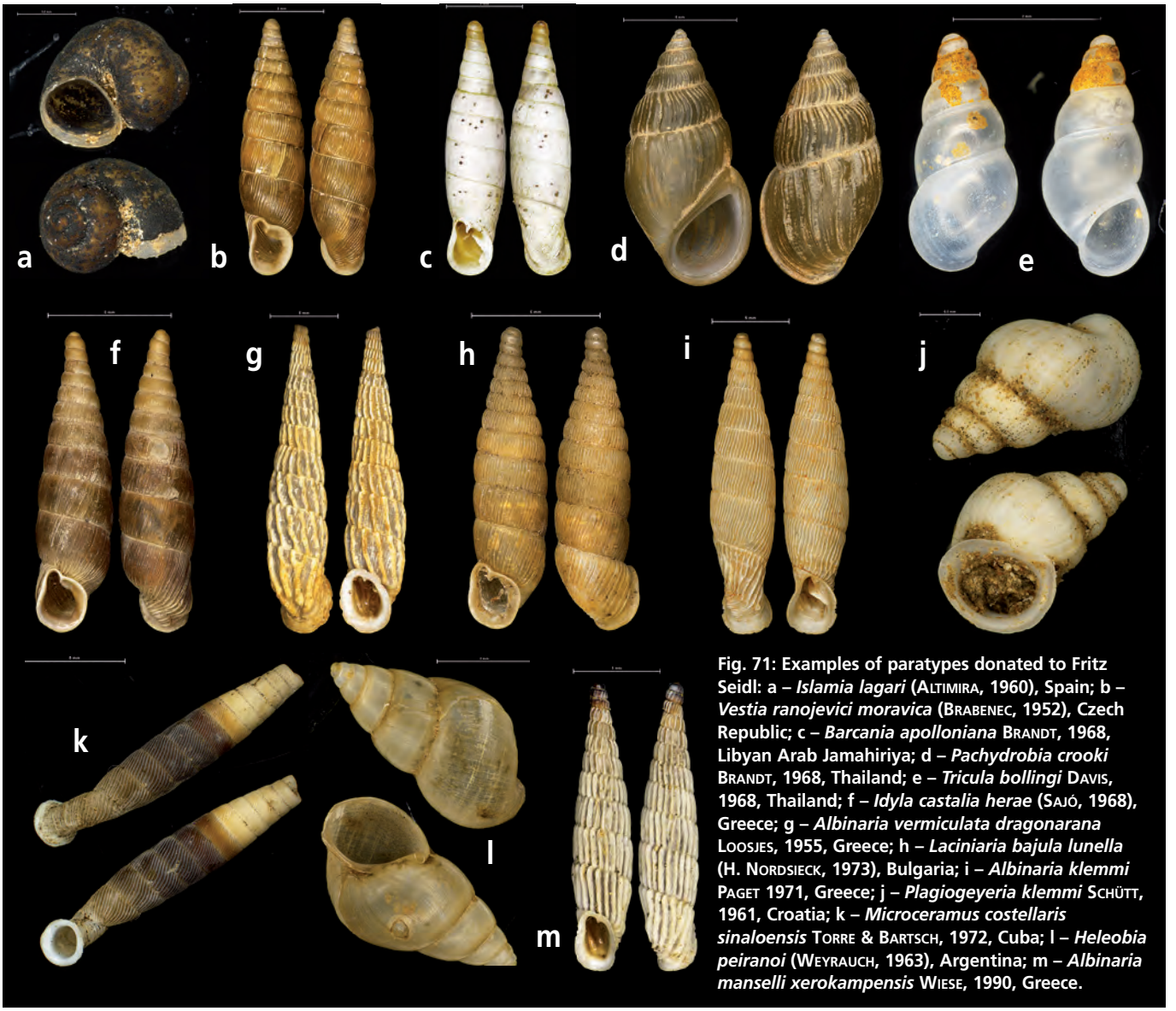

Fig. 71: Examples of paratypes donated to Fritz Seidl: a – *Islamia lagari* (Altimira, 1960), Spain; b – *Vestia ranojevici moravica* (Brabenec, 1952), Czech Republic; c – *Barcania apolloniana* Brandt, 1968, Libyan Arab Jamahiriya; d – *Pachydrobia crooki* Brandt, 1968, Thailand; e – *Tricula bollingi* Davis, 1968, Thailand; f – *Idyla castalia herae* (Sajó, 1968), Greece; g – *Albinaria vermiculata dragonarana* Loosjes, 1955, Greece; h – *Laciniaria bajula lunella* (H. Nordsieck, 1973), Bulgaria; i – *Albinaria klemmi* Paget 1971, Greece; j – *Plagiogeyeria klemmi* Schütt, 1961, Croatia; k – *Microceramus costellaris sinaloensis* Torre & Bartsch, 1972, Cuba; l – *Heleobia peiranoi* (Weyrauch, 1963), Argentina; m – *Albinaria manselli xerokampensis* Wiese, 1990, Greece.

The main years of emphasis for specific topics are summarised as follows:

popularisation (1975f, 1992b, 1993e, 1994d, 1995a, 2002a)

helminths (1976b, f, 1977d, i, 1978g, 1979a, 1980c)

sporozoans (1977g, h, 1978c, f, 1980a, c, 1981a)

ornithology (1977a)

observations on **specific** mollusc **species** (1977f, 1978a, b, e, 1980b, 1982a, 1983b, d, 1984a, i, 1985a, b, 1986a, 1987h, 1988g-j, 1990b, c, 2013, 2015a, e, 2016c, d, g, h, k, 2017a, 2018b, e), including **first records** (1977b, c, 1982c, 1984f) and **neobiota** (1988i, 1992a, 1995b 2016d, 2016i, 2017a, 2018b)

mollusc **associations** in Austria (1989b, c, 1991 [with Reischütz], 1992c, 1996b); **Styria** (1975a-e, 1976a, 1976d, 1977e, 1978d [in Hungarian language], 1979b, c, 1986b, 1992g, 1993d, 1994c); **Lower Austria** (1981b, 1982d, 1983a, 1984b, c, e, 1985c-g, 1986b, d, 1987a, b, d, e, g i, k, l, m, 1988a, d, 1992d, e, 2016a); **Upper Austria** (1986c, 1988f, 1994e, f); Burgenland (1988k, l); other states (1976c, 1983c, 1984d, g, 1985d, 1986d, e, 1986 [with Kinzelbach], 1987c, f, 1988b, c, 1989d, 1991b, 1994 [with Schileyko], 1996a, 1998a, c, 2015d, 2018d)

paleontological (1990a, 1991a, 1992f, 1993b, 1994a, b, 1996c, d, 1997a-ab, 1998d, 2000a, c, 2001a, 2002b, 2004, 2005a, b, 2006a-d, 2008a-e, 2009a-c, 2010a-e, 2012, 2014, 2015b, c, 2016b, 2016e, f, 2016j, 2017b, c, 2018a)

biographical notices (1993a, 1997, 1998b, 2002c, 2003, 2010f, 2011a, b).

In the course of around hundred trips around the world (Tab. 6), a huge collection of continental and marine molluscs has been created, the overwhelming

portion is – via Prof. Dr. Fritz **Steininger** of the Krahuletz-Society Eggenburg – currently housed in the Upper Austrian Museum in Linz. Longer research visits took place in Greece, the western United States, especially in the Lesser Antilles, Dominican Republic and the island of Hispaniola.

More than 50 portions, i.e. currently 43,981 series aggregated by sampling places, of the collection arrived since 2009. Since only a small part of the series was recorded in Excel spreadsheets, we had to deal with the data acquisition (mainly by Agnes Bisenberger), inventory and location allocation for a long time.

Frank altogether described (partly together with other authors) 5 taxa of the species group and one new genus:

Nepaliena SCHILEYKO & FRANK, 1994: Arch. Moll. **123**(1/6): 127–136

Laevozebrinus nepalensis SCHILEYKO & FRANK, 1994: Arch. Moll. **123**(1/6): 127–136

Gulella protruda NEUBERT & FRANK, 1994: Arch. Moll. **126**(1/2): 125–127

Oxychilus (*O.*) *steiningeri* FRANK & RIEDEL, 1994: Malak. Abh. Staatl. Mus. Tierkde. Dresden **18**/17: 181–191

Congeria *steiningeri* FRANK, 2006d: Mitteilungen der Prähistorischen Kommission **62**: 703–705

Colonina gerhardfellneri WATTERS & FRANK-FELLNER, 2017): J. Conchol. **42**: 531–534 (paratypes deposited in Linz).

Further biographical notes on personalities, whose roles regarding Linz are in need of studying

AESCHT (2003) provided species list of 252 mollusc taxa in alphabetical order of type specimens deposited in the Linz collection including the category, largely given on the label as "paratype", viz. taxonomically relevant voucher material, and the accession number(s). The publication can be found via the world wide web. Searching references for the taxa in the Zoological Record yielded many negative results indicating that preliminary, not yet described therefore unavailable "nomina nuda", i.e. naked names, are involved. Moreover, the real provenance of the samples, which were largely found in the Fritz Seidl collection, is often quite unclear. So any comments of members of the researcher community on molluscs are welcome. Some very small paratype specimens of about 45 taxa have been photographed in the meantime and are exemplified in Figure 71.

Wolfgang **Adensamer** (1899–1964; Austria): head of the mollusc collection NHMW (1923-1945), who collected mainly non-marine molluscs (1920s-1940s) and commemorated Rudolf Sturany (ADENSAMER 1935a-c). Distributed more than 50 series, including duplicates of non-European samplings, to Mikula and Zimmermann. For more biographical and bibliographical information we refer to STEINDACHER (1901), ESCHNER (2018) and COAN & KABAT (2019).

Carlos **Altimira** Aleu (1918-1983; Spain): paratypes of 8 taxa (e.g. Fig. 71a). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Masao **Azuma** (1916–2001; Japan): 207 Japanese series, e.g. topotypes of *Nesiohelix reinia*. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. Spouse of Taka Azuma; marine gastropods (1970s) according to COAN & KABAT (2019 and references therein).

Wim (Willem) **Backhuys** (*1944; Netherlands): 11 series of Spain. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to STURANY (1901) and (COAN & KABAT 2019).

Heinz **Barthelmes** (1919–?; Germany): 7 series of Algeria etc. to Mikula. For more biographical and bibliographical information we refer to (COAN & KABAT 2019).

Theodor **Berger** (1887–1956; Austria): donated in 1915 164 series to OLML, which he had collected during World War I in Volhynia (Poland; AESCHT 2003: 71). Afterwards he was headmaster in Linz.

Jaroslav **Brabenec** (1903–1978; Czech Republic): 361 series of the 1950s–1970s including paratypes of 4 taxa (e.g. Fig. 71b). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Rolf Arthur Max **Brandt** (1917–1989; Germany): Collections in NHMW (ESCHNER 2018) and Naturhistorisches Museum, Bern; freshwater fauna of Thailand (COAN & KABAT 2019 and references therein). 142 series (1955–1976) including paratypes of 60 taxa (e.g. Fig. 71c, d), possibly via the former Jens **Hemmen** collection.

Monika **Bright** (*1962; Austria): Zoologist in Vienna; she collected 13 very rare samples of molluscs near the hot vents in the East Pacific Rise and has been co-organiser of many authors for Denisia 18 in 2006 (see reference section).

Louis Johan Marie **Butot** (1918-2008; Netherlands): 3 Asian series of the 1950s including paratypes

of 1 taxon. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Sow Yan **Chan** (?–?; Singapore): 159 Asian series, likely donated by Fischer Wolfgang.

Eberhard **Clauss** (1932–2013; Germany): 82 East-European series, particularly of Russia. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Karl **Czoernig** ["Freiherr", i.e. baron] von Czernhausen (1883–1945; Austria): collected in 1850 64 South-European series, the specimens seemingly were distributed from the geologist F. Hauer to Stojaspal and then to Mikula.

George Morgan **Davis** (1938-?; USA): paratypes of 2 taxa (e.g. Fig. 71e). For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Fernando G. **Dayrit** (?–2007; Phillipines): 43 Phillipine series of the 1960s. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Joseph **Devidts** (?–?; France): 16 South-European series. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter.

Ämilian **Edlauer** (1882–1960; Austria): More than 400 series from 1910–1955 to Mikula**,** Ganslmayr and Zimmermann. Viennese malacologist, collector (non-marine) and consulant of NHMW. For more biographical and bibliographical information we refer to PAGET (1960), ESCHNER (2018) and COAN & KABAT (2019).

Hubert **Elser** (?–?; Austria): A handwritten note from senior teacher living in Wels, who has collected about 468 series mainly between 1940-1983 and was in exchange with Zimmermann, should not be unmentioned. He characterized the situation of mollusc research in the federal state with the words: „I am the Upper Austrian malacozoology modernistic alibi". We highly welcome interpretations of this statement.

Josef **Erber** (1824–1882; Austria): 45 series mainly Europe, few from India, Madagaskar and Taiwan 1920er to Mikula**.**

Georg **Erlinger** (1939–2011; Austria): ornithologist in Braunau am Inn; 142 series mainly of the 1960s to Fritz Seidl; both were co-authors in two publications (SEIDL & ERLINGER 1968, ERLINGER et al. 1974).

Gerhard **Falkner** (*1942; Germany): 21 European series mainly 1961–1983 including a paratype series of 1 taxon. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Fischer's (*?; Austria): Apart from Thomas and Wolfgang, most Fischer's are however unspecified by surnames, thus many of the 352 series from the Indopacific region possibly came from futher collectors. Personal contacts between Wolfgang Fischer and Seidl are indicated by reprints in the collection of the latter.

Ernst Josef **Fittkau** (1927–2012; Germany): entomologist; papers on *Cymbium* taxonomy in 1980, 1985 according to COAN & KABAT (2019 and references therein). 135 series from Australia and Brazil 1960s, Chile, Cuba and Mexico 1960–1999 including a paratype series of 1 taxon. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter.

F. **Fridrich** (?–?; Italy): In 1930 N. Meguscher (Wels) donated a large land, freshwater and marine mollusk collection from the estate of F. Fridrich, of which unfortunately no personal details are known (several 1000 specimens). 610 series all undated from the Antilles, Australia, Brazil, Indonesia, India, Israel, Japan, Sri Lanka, Morocco, Madagascar, Mexico, Mauritius, Malaysia, New Caledonia and USA.

Anton **Fuchs** (1878–1942; Austria): Viennese tax officer and malacologist; more than 100 European series 1917–1939 to Mikula, Ganslmayr and Zimmermann. In 1929 he published a contribution to Upper Austrian molluscs (FUCHS 1929). For more biographical and bibliographical information we refer to ESCHNER (2018).

Jose-Ahuir **Galindo** (?–?; Morocco): 37 series from Spain and Morocco around 1991.

David **Geyer** (1855–1932; Germany): 108 series from Lithuania 1900–1931 to Ganslmayr, Zimmermann and Mikula. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Edmund **Gittenberger** (*1943; Netherlands): about 70 series 1958–1980 including a paratype series of 1 taxon. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Manfred **Götz** (*?; Austria): Retired teacher in Lower Austria; about 260 series 2010–2017, e.g. Namibia, partially co-collected with Frank.

Shingo **Habu** (?–?; Japan): a dozen Japanese series 1990s via Wolfgang Fischer. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Robert **Haldemann** (?–?; Germany): about 180 series from Aruba, Australia and Philippines 1969—1986. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Peter **Hardenberg** (?–?; Germany): collector and trader, at least more than 200 series from Australia, Brazil, Costa Rica, Indonesia, Philippines and Taiwan 1974–1999.

Ludwig **Häßlein** (1906–1979; Germany): about 100 series 1925–1971. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter.

August **Hauser** (?–?; Austria): 182 series from S-Europe and Israel 1911–1990 to LM.

Eduard Leib **Heiman** (1936–?; Israel): 65 series from Israel and Egypt 1969–1998. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Jens **Hemmen** (1944–2012; Germany): at least 100 series from Aruba, Australia, Laos, Libya and Thailand 1967–1986. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Harry Johannes **Herold** (1887–1984; Germany): at least 50 European series 1902–1969. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Dietrich **von der Horst** (1902–1982; Germany): since 1964 at least 2034 series, apart from many European countries, from Angola, Argentina, Australia, Azerbaijan, Brazil, Chile, China, Cuba, Cyprus, Dominican Republic, Algeria, Ecuador, Egypt, Gabon, Georgia, Indonesia, India, Iraq, Israel, Japan, Kazakhstan, Kenya, Lebanon, Libya, Lithuania, Morocco, Madagascar, Maldives, Mexico, Martinique, Mauritius, Namibia, New Caledonia, New Zealand, Peru, Philippines, Papua New Guinea, Puerto Rico, Palestinia, French Polynesia, Réunion, Senegal, South Georgia, Somalia, Seychelles, Syria, Turkmenistan, Tunisia, Taiwan, Tanzania, Uruguay, USA, Viet Nam, Vanuatu, Yemen, South Africa. Renate von der Horst is also recorded as collector. For more biographical and bibliographical information see SEIDL (1982c).

Siegfried Gustav Anton August **Jaeckel** (1907–1986; Germany): 38 series 1930–1972 Personal contacts between him and Seidl (or likely Mikula) are indicated by reprints in the collection. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Alfred **Jahn** (?–?; Germany): at least 250 series from Brazil, Indonesia, India, Japan and Philippines 1925–1991.

Horst **Janus** (1922–?; Germany): about 10 European series. Personal contacts between him and Seidl (or likely Mikula) are indicated by reprints in the collection. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Jürgen H. **Jungbluth** (1940–?; Germany): few series 1970er. Personal contacts between him and Seidl, as well as Frank, are indicated by reprints in the collection of the former. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Alfred **Kaltenbach** (1807–1876; Austria): few series from Libya and Namibia. Personal contacts between him and Seidl (or likely Mikula) are indicated by reprints in the collection.

Franz **Käufel** (1892–1956; Austria): paratypes of 3 taxa, likely to Mikula. Viennese lawyer and malacologist (non-marine); for more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Hedwig „Hessie“ **Kemper** (1916–1996; USA): For more biographical and bibliographical information we refer to COAN & KABAT (2019). More than 600 USA series 1931–1979.

Vince **Kessner** (*?; Australia): collector, nearly 290 series from Australia and Indonesia 1955-1995, possibly via Jaromir Němec.

Richard Emmanuel von Kimakowicz-Winnicki **[Kimakovicz]**, (1875-1973; Austro-Hungary/Romania/Hungary): paratype series of 4 taxa to Mikula. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Alois **Kofler** (1932–?; Austria): at least 35 series, e.g. from Sweden, 1948-1983. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical information we refer COAN & KABAT (2019).

Gyula **Kovács** (1932–1996; Hungary): 44 mainly Romanian series 1952–1982 to Frank. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to to FRANK (1998b) and COAN & KABAT (2019).

Wilhelm **Kühnelt** (1905–1988; Austria): Viennese zoologist mainly noted for his work in entomology; a dozen gastropod series from the 1930s. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Johannes [Hans] Gijsbertus Jacobus **Kuiper** (1914–2011; Netherlands): revised about 300 determinations of bivalves for Frank and Seidl. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Gert **Lindner** (*?; Germany): about 300 series 1924-1995 to Mikula and Seidl. For more bibliographical information we refer to COAN & KABAT (2019).

Fredrik [Fritz, Frits] Elisa **Loosjes** (1913-1994; Netherlands): a paratype series of 1 taxon (e.g. Fig. 71g). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Franz **Luttenberger** (*1939; Austria): Viennese herpetologist and collector; 43 series to Seidl and 467 mollusc (and further zoological) series (1949-2014) to Linz. Apart from European countries, Netherlands Antilles, Australia, Azerbaijan, Cameroon, Costa Rica, Cuba, Cyprus, Ecuador, Egypt, Fiji, Micronesia, India, Iran, Israel, Kenya, Sri Lanka, Maldives, New Zealand, Panama, Philippines, Palau, French Polynesia, Sudan, Senegal, Solomon Islands, Seychelles, Tonga, USA, Venezuela and Yemen. Personal contacts between him and Seidl are validated by reprints in the collection of the latter. Moreover, Luttenberger has given at least one lecture for the Zoological Society Braunau (SEIDL F. [III] 2002).

Sylvestr **Mácha [Máchu]** (1913–2007; Czech Republic): 199 E-European series from 1951-1974. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Hendrik [Henk] Klaas **Mienis** (*1941; Netherlands/Israel): at least 300 series (1960-1993; those before, e.g. in 1905 stem from other collectors): Argentina, Australia, Brazil, Chile, Congo, Cuba, Algeria, Egypt, Indonesia, India, Israel, Jamaica, Japan, Libya, Sri Lanka, Morocco, Mexico, Mauritania, Mauritius, New Zealand, Panama, Peru, Philippines, Papua New Guinea, Russia, Solomon Islands, Tunisia, Uganda, Uruguay, USA, Venezuela, Viet Nam. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Friedrich **Morton** (1890–1969; Austria): Viennese botanist and founder of the Biological Station in Hallstatt; 97 series (S-)European series to LM 1946-1959 were determined by Oliver Paget and inventorised in 2007.

Jaromir **Němec** (?–?; Czech Republic): 259 series of European countries and other continents, for some of which Vince Kessner of Australia seems to be the collector, 1943–1974 to Seidl. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Wim Hendrik **Neuteboom** (1920–2000; Netherlands): 51 series 1967 (possibly including some of D. Aten around 1948). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Hartmut **Nordsieck** (*?; Germany): around 70 series, e.g. from Spain, undated or until 1982 including 15 paratypes (e.g. Fig. 71h). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. Son of the malacologist Fritz Nordsieck (1906–1984; COAN & KABAT 2019 and references therein).

Alfred **Oberwimmer** (1875–1930; Austria): Viennese medical and malacologist; at least 33 series Mikula and Zimmermann. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Oliver Edgar **Paget** (1922–2011; Austria): head of the mollusc collection NHMW (1955–1987); 27 series 1900-1967 including a paratype series of 1 taxon (e.g. Fig. 71i). For more biographical and bibliographical information we refer to **STARMÜHLNER** (1988), **FRANK** (2011a, b), ESCHNER (2018) and COAN & KABAT (2019).

Thomas [Tom] **Pain** (1915–2003; U.K.): 4 Peru series, which might be related to **Weyrauch**. Anyhow, personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Robert **Patzner** (*1945; Austria): retired zoologist of the University of Salzburg; deposited at least 100 series and many publications of him or his working group members appeared in our journals (see reference section).

Andrzej **Piechocki** (?–?; Poland): revised about 100 determinations of bivalves for Seidl. Personal contacts between him and Seidl are furthermore indicated by reprints in the collection of the latter. For more biogra-

phical and bibliographical information we refer to COAN & KABAT (2019).

Henry [Harry] Augustus **Pilsbry** (1862–1957; USA): a paratype series of 1 taxon Frank and Seidl; introduced species honoring Weyrauch. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

László Ernö [Pater] **Pintér** (1942-2002; Hungary): 82 series, e.g. Cuba 1973–75, including a paratype series of 1 taxon. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to FRANK (2003) and COAN & KABAT (2019).

Jürgen **Plass** (*1962; Austria): assistant in the OLML vertebrate collection, Plass collected more than 200 series since 2002 from the Antilles, Argentina, Brazil, Costa Rica, Myanmar, Peru, Thailand, Tanzania, Ukraine, Venezuela and European countries. Most specimens still need to be determined.

Wolfgang **Rähle** (*1939; Germany): revised about 200 determinations. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Josef **Reichholf** (*1945; Germany) & Helgard **Reichholf-Riehm** (*1940; Germany): ornithologists and beyond donating at least 145 series from Brazil, Cape Verde, Paraguay, Switzerland and USA 1970-1991. Helgard Reichholf-Riehm was engaged in the Zoological Society Braunau (1987–2006). Josef Reichholf has already be acquainted with Fritz Seidl senior [I.] (REICHHOLF 1985) and Seidl initiated a special volume of the Mitteilungen der Zoologischen Gesellschaft Braunau on occasion of the 30th birthday of Josef Reichholf (SEIDL 1975). Together they popularised the fauna in the district Braunau (ERLINGER, REICHHOLF & SEIDL 1974, REICHHOLF & SEIDL 1992).

Andreas **Reischek** (1845–1902; Austria): born in Linz, baker apprentice, ethnograph and taxidermist for the Museum Association Linz. Ferdinand von Hochstätter gave him a job at the Zoological Museum in Christchurch, New Zealand in 1877, where he stayed (or returned 8 times) until 1889, gathering abundant zoological material, mainly birds, during some expeditions. Large parts of its collections are in NHMW, but those deposited in Linz include at least 38 mollusc series from USA and New Zealand dated 1870, 1879, 1884 and 1887.

Peter L. **Reischütz** (*?; Austria): at least 38 series to Seidl; revised more than 100 determinations in the 1990s for Seidl and Frank, in addition co-author of both (see page 663 and REISCHÜTZ & SEIDL 1972). REISCHÜTZ initiated the very helpful bibliography series on "Austrian" molluscs and wrote severals article for our journal LBB (REISCHÜTZ & SACKL 1991, REISCHÜTZ 1993). For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Andor **Richnovszky** (1932–1993; Hungary): 28 series from Australia and Cuba 1953-1974. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Adolf **Riedel** (1930–2010; Polen): 70 series 1959-1997 including a paratype series of 1 taxon. Personal contacts between him and Seidl (Mikula) are indicated by reprints in the collection of the latter. One new species was introduced by FRANK & RIEDEL (1997) in honour of Fritz Steininger, geologist and former director of the Senckenberg institution in Frankfurt. Non-marine fauna of Poland and Greece (1980s). For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Gustav **Riedl** (?–?; Austria): GUSENLEITNER (1983: 138) announced for 1934 the estate of Gustav Riedl (Vienna) a specimen collection of shell parts and pearl stages in the possession of Upper Austrian Museum. "The inventory book recorded under the numbers 95-100 on 28.4.1934: 830 microscopic slides (not yet inventorised in detail) with serial sections of shell parts with pearl formations, coat edges, pearles, etc.; 81 paraffin blocks with embedded parts of shell parts; 9 fioles of parts of the body with glochidia; Seeds and cut beads; 67 photographic plates of photographs of microscopic preparations and pearl cultivation; 39 plates of photographs for the work RIEDL (1928) in JOOM; 10 pictures of Riedl's work on shell, pearls etc." These notes as well as the biography have to be detailed.

Dieter **Röckel** (1922–2015; Germany): 39 series from Ecuador and Philippines 1950s-1971 to Seidl. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Istvan **Sajó** (?–?; ?): a paratype series of 1 taxon (e.g. Fig. 71f).

Josef **Schedel** (1856–1943; Germany/Japan/China): 31 series from Japan, China 1910-29. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Otto **Scheerpeltz** (1888–1975; Austria): 88 series (1950-65). MIKULA (1957) introduced a new subspecies in his honour.

Anatoly A. **Schileyko** (*1940; Russia): in 2009 he examined the types of the snail genus *Orcula*. The results were published by HARL et al. (2011). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. SCHILEYKO & FRANK (1994) introduced two new mollusc taxa of Nepal. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Hans Andreas **Schlesch** (1891–1962; Denmark): at least 39 series including a paratype series of 1 taxon 1930 to Mikula. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Wilhelm Richard **Schlickum** (1906–1979; Germany): determined at least 100 series of Mikula 1912-1972. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Rita **Schrattenecker-Travnitzky** from Salzburg 2011 revised the diaper snails (*Vertigo*) vouchers. She deposited 232 series and published in the LBB (STRASSER, TRAVNITZKY & PATZNER 2006,TRAVNITZKY & PATZNER 2009; SCHRATTENECKER-TRAVNITZKY 2011).

F. **Schröder** (?–?; Germany): 47 Spanish and German series 1967-75. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. Land snails of Islas Baleares, Spain (1978, 1984) according to COAN & KABAT (2019).

Josef **Schuller** (1899–1969; Austria): revised more than 300 determinations of Mikula.

Hartwig **Schütt** (1923–2009; Germany): chemist and malacologist; 54 S-European series including paratype series from 8 taxa (e.g. Fig. 71j). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. He also determined specimens of CF. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Daan **Smits** (1920–2011; Netherlands): 129 mediterranean series and from Jamaica, Surinam, Libanon, Cuba, Venezuela 1936-1978 to Seidl. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

George Alan **Solem** (1931-1990; USA): paratype series of two taxa. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

John L. **Staid-Staadt** (1886–1970; UK/France): 52 series from his home countries and Viet Nam to Seidl . For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Ferdinand **Starmühlner** (1927–2006; Austria): Viennese zoologist and malacologist, who distributed at least 92 series to Seidl and at least 386 series to Christa Frank from his expeditions to the Indopazific. Anyhow a detailed comparison between series without collector given and the more than 100 papers of Starmühlner is necessary. Personal contacts between him and Seidl are validated by reprints in the collection of the latter and at least 7 lectures for the Zoological Society Braunau (SEIDL F. [III] 2002). For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Franz **Stojaspal** (1946–2012; Austria): more than 200 series 1859-1979 including paratype series from 2 taxa. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Ferdinand **Stoliczka** (1838–1874; Austria/India): paleontologist and geologist; 4 undated India series to Stephan Zimmermann. For more biographical and bibliographical information we refer to ADENSAMER (1935a-c), ESCHNER (2018) and COAN & KABAT (2019).

Brunhilde **Stummer** (1928–2008) & Anton **Stummer** (*1930; Austria): Anton Stummer (born 1930 in Stein an der Donau) is an artist, conservator and regional historian. He worked from 1950 until his retirement in 1989 in the service of the municipality of Krems on the Danube and from 1956 after training as a restorer in the Federal Monuments Office Vienna. His wife Brunhilde Stummer became a well-informed expert on native species, through his animation and their acquaintance with Walter Klemm [REISCHÜTZ 2009]. More than 22,000 series of her collection were purchased by the Academy of Sciences in Vienna because of their importance. Prof. Dr. Fritz Steininger of the Krahuletz-Society Eggenburg announced his help to transfer the currently unedited collection to Linz, because we received 2500 series of Anton Stummer's collection in 2018. More than 100 series of land snails 1961–1984. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter.

Rudolf **Sturany** (1867–1935; Austria): former student of the monastery Kremsmünster was intensely connected to Upper Austrian malacologists and determined, partially donated, more than 100 world-wide series 1920-25; head of the mollusc collection at NHMW (1892-1922; curator since 1889). SEIDL (1978c) edited a travel journal to Crete provided by Walter **Klemm**. For more biographical and bibliographical information we refer to ALBANO et al. (2017, 2018), ESCHNER (2018) and COAN & KABAT (2019).

Peter **Subai** (?–?; Germany): Land snails from 1970s. 63 series including a paratype series from 2 taxa. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Wolfgang **Suppantschitsch** (1943–2008; Austria): Viennese zoologist in contact with CF .

Eduard **Thaler** (?–?; Austria): 29 undated series e.g. from Iran 1948-1970. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Prasong **Temcharoen** (?–?; Laos/Thailand): paratypes series of 3 taxa; investigated freshwater gastropods (1971) according to COAN & KABAT (2019).

John Read le Brockton **Tomlin** (1864–1954; UK): 43 undated series to Stephan Zimmermann. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

C. de la **Torre** (?–?; ?): paratype series of 4 taxa (e.g. Fig. 71k). Personal contacts between him and Seidl are indicated by reprints in the collection of the latter.

Philip Shraga **Tsuriel** (?–1997; Israel): about 40 series from his home country 1970-1985 to Seidl . For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Karl **Uetz** (1914–?; Austria): Viennese owner of a coffee house and private collector; at least 50 series to Mikula. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Rodolphe **Verhaeghe** (1906–1989; Belgium): at least 100 series from Morocco, Niger, Nigeria, New Zealand, Sierra Leone, Swaziland, Togo, Tanzania, USA. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Manuel **Vilella** (?–?; Spain): at least 150 series from USA, Mexico, Canada 1957-1974. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Antoni [Anton] Józef **Wagner** (1860–1928; Austria): Silesian naturalist and malacologist; 43 series to LM and Mikula since 1925 including paratype series from 3 taxa. For more biographical and bibliographical information we refer to ESCHNER (2018) and COAN & KABAT (2019).

Wolfgang Karl **Weyrauch** (1907–1970; Germany/Peru/Argentina): about 230 series from Argentina, Colombia and Peru 1936-1969 including paratype series of 85 taxa (e.g. Fig. 71l). Several reprints of him are in the Seidl collection, possibly via Hemmen. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Georg **Wieninger** (1859–1925; Austria): pioneer of agriculture and important collector especially of vertebrates, many vouchers, of which 69 are molluscs from South America (1874-1880). From the collection Wieninger, Otterbach the representation of a „bank" of river pearl mussels (with about 90 pieces *Margaritiana margaritifera*) as an example of the favorable condition for reproduction was modelled in 1939; it is currently issued to the conservation and cultural association Burgruine Reichenstein as a permanent loan.

Vollrath **Wiese** (*1962; Germany): paratype series of 2 taxa (e.g. Fig. 71m).

Andrzej **Wiktor** (1931–?; Poland): 45 series 1983-1999, determined sluge specimens. Personal contacts between him and Seidl are indicated by reprints in the collection of the latter. FRANK & WIKTOR (1997) and WIKTOR & FRANK (1997) cooperated on subfossil Parmacellidae. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Adolf Michael **Zilch** (1911–2006; Germany): a paratype series from 1 taxon; helped with determinations. Zilch and Seidl collected together in 1968. For more biographical and bibliographical information we refer to COAN & KABAT (2019).

Special projects

Fritz Seidl and Christa Frank were involved – in cooperation with Peter L. Reischütz – in revising the red lists of Austrian molluscs (REISCHÜTZ & SEIDL 1982; FRANK & REISCHÜTZ 1994). The Red List of REISCHÜTZ & REISCHÜTZ (2007) has not been updated since then. A summary of our subnational check list (AESCHT & BISENBERGER 2011) is given on page 605. In the meantime further voucher series predominantely of Christa Frank of the sampling period 1984–2017 were analysed. Most of them however concern taxa considered as least concerned (LC) or were "Not Evaluated" (NE). Likewise, the category "Data Deficient" (DD) remains unchanged. Due to the unresolved taxonomic and consequently nomenclatural status of many (sub)species, we do not provide a revised check list of Upper Austrian gastropods and bivalves. Instead, we highlight several of

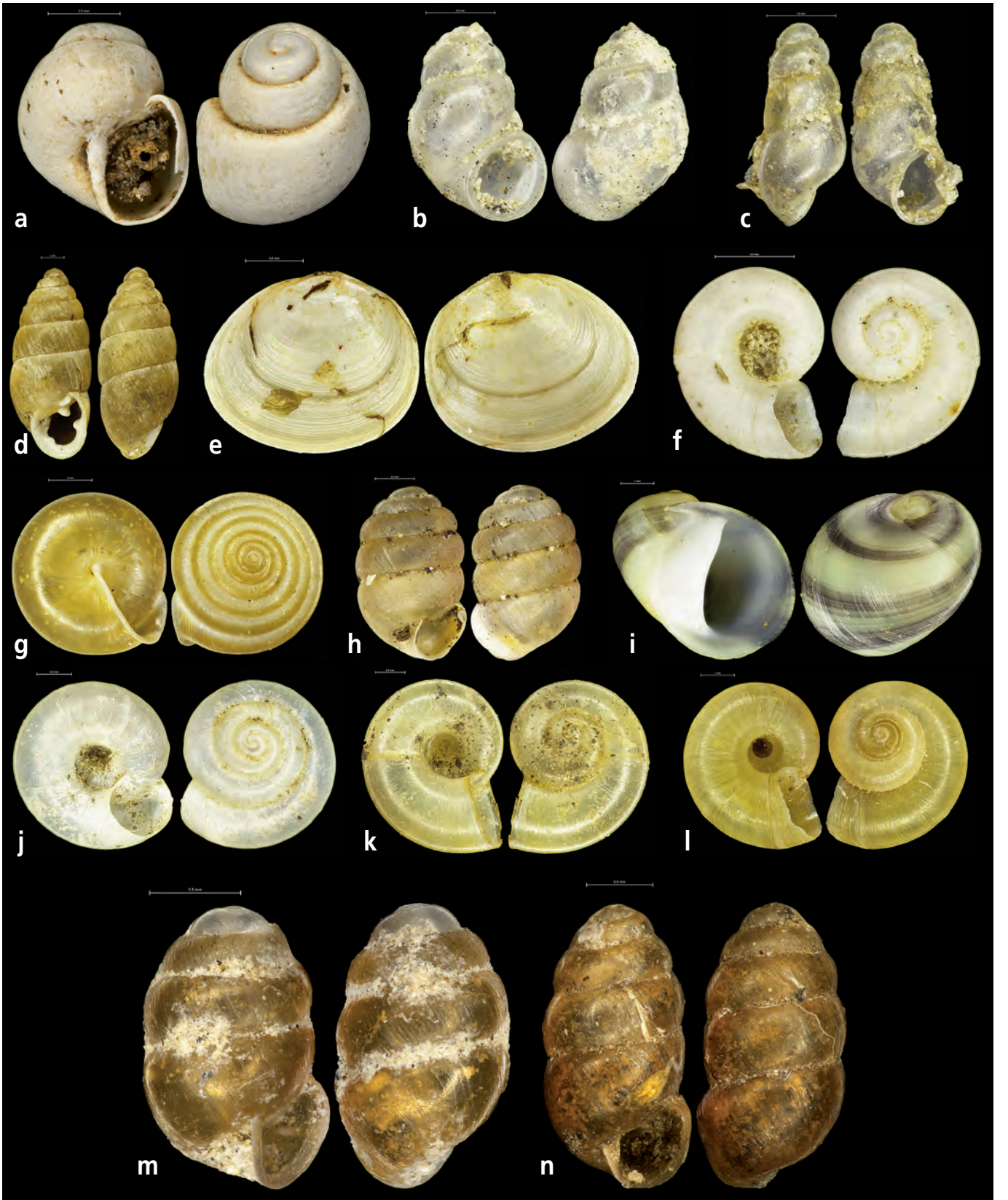

Fig. 72: Taxa in critical danger of becoming extinct (category "Critically Endagered", CR) in Upper Austria: **a** – *Belgrandiella fuchsi* (1990 0/0); **b** – *Belgrandiella ganslmayri* (2014 14/3); **c** – *Bythiospeum elseri* (1993 10/6); **d** – *Chondrula tridens* (2002 9/8); **e** – *Euglesia pseudosphaerium* (2000 4/4); **f** – *Hauffenia kerschneri* (1992 16/16); **g** – *Perforatella bidentata* (2002 34/33); **h** – *Pupilla bigranata* (1985 1/0); **i** – *Theodoxus transversalis* (1995 3/3); **j** – *Vallonia declivis* (1974 4/4); **k** – *Valvata macrostoma* (2017 19/1); **l** – *Valvata piscinalis alpestris* (2000 27/21); **m** – *Vertigo geyeri* (2011 2/2); **n** – *Vertigo heldi* (1993 5/4).

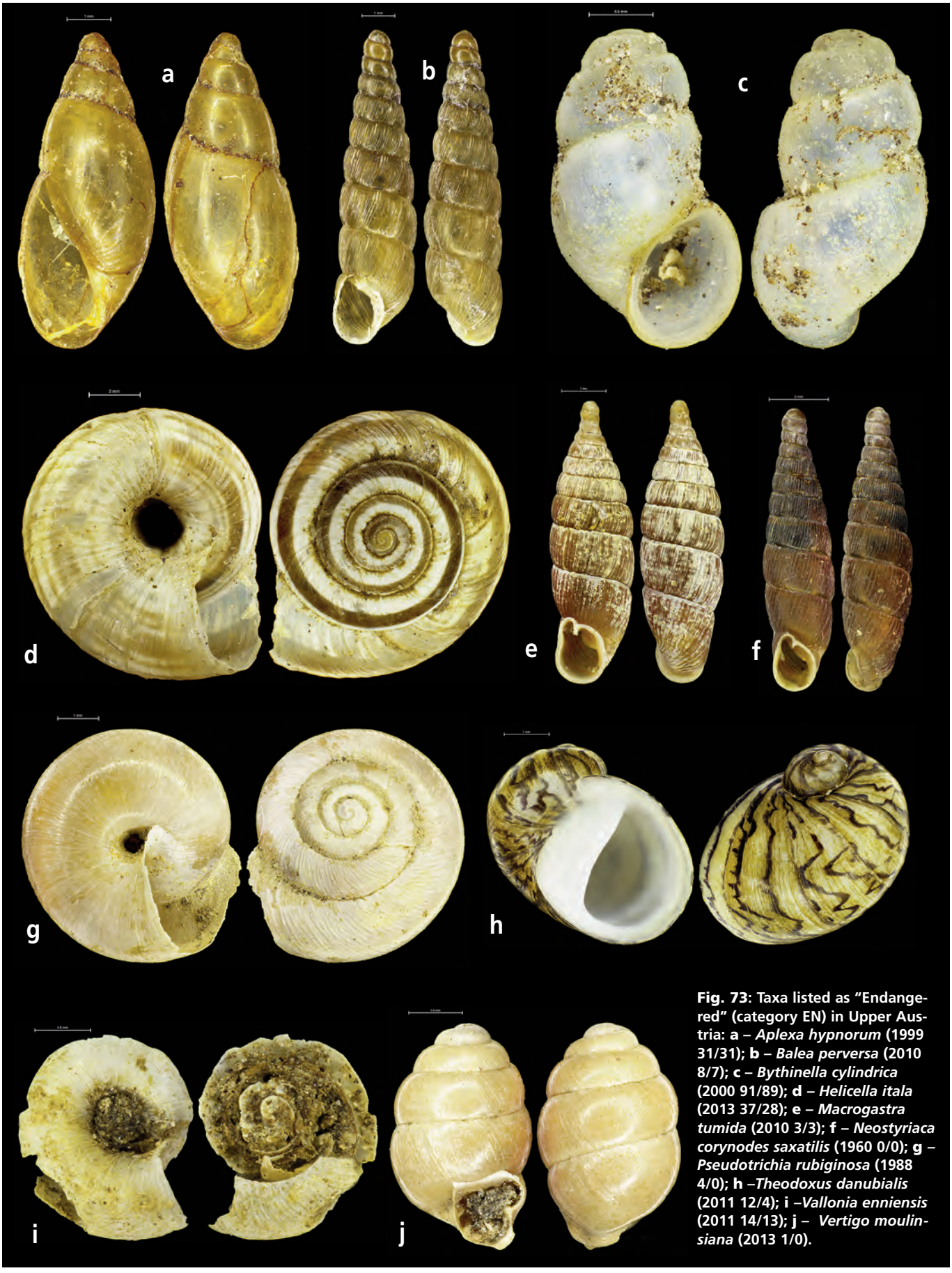

Fig. 73: Taxa listed as "Endangered" (category EN) in Upper Austria: **a** – *Aplexa hypnorum* (1999 31/31); **b** – *Balea perversa* (2010 8/7); **c** – *Bythinella cylindrica* (2000 91/89); **d** – *Helicella itala* (2013 37/28); **e** – *Macrogastra tumida* (2010 3/3); **f** – *Neostyriaca corynodes saxatilis* (1960 0/0); **g** – *Pseudotrichia rubiginosa* (1988 4/0); **h** –*Theodoxus danubialis* (2011 12/4); **i** –*Vallonia enniensis* (2011 14/13); **j** – *Vertigo moulinsiana* (2013 1/0).


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Fig. 74: Taxa listed as "Vulnerable" (VU) in Upper Austria: **a** – *Agardhia truncatella* (1992 6/6); **b** – *Anisus spirorbis* (2010 12/4); **c** – *Bythinella opaca* (1923 6/6); **d** – *Clausilia cruciata* (2010 5/5); **e** – *Cochlicopa lubricella* (2014 45/33); **f** – *Columella columella* (2010 14/13); **g** – *Eucobresia glacialis* (1999 1/0); **h** – *Euglesia tenuilineatum* (1973 2/2); **i** – *Gyraulus acronicus* (2010 15/8); **j** – *Hippeutis complanatus* (2007 27/17); **k** – *Macrogastra badia*; **l** – *Macrogastra plicatula plicatula* (2017 102/92); **m** – *Nesovitrea petronella* (2017 6/4); **n** – *Orcula gularis oreina* (2009 2/2); **o** – *Oxychilus depressus* (1974 0/0); **p** – *Physa fontinalis* (2014 36/27); **q** – *Semilimax kotulae* (1991 1/1); **r** – *Trochulus hispidus scheerpeltzi* (2009 8/8); **s** –*Trochulus striolatus danubialis* (2011 95/51); **t** –*Trochulus striolatus juvavensis* (2009 1/1); **u** –*Vertigo substriata* (2011 21/19).

the most threatened taxa by photographs and some comments with the following structure: current last year of observation as well as number of series in 2018 and 2011, respectively. When only a reference from the literature exists, the latter may be zero.

The first record of the neobiont *Sinanodonta woodiana* in Upper Austria has been made by PATZNER & AITENBICHLER (2014) and BILLINGER et al. (2014).

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General literature is listed alphabetically and important family names are marked in **bold**, whereas the three personally attributed reference lists are sorted chronologically with the beginning of a new decade marked in **bold**.

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