

# **Description and holdings of the Entomological Collection at ETH Zurich**

*This compendium is based on previous works by Willi Sauter (1993),  
Bernhard Merz (1998) and Franziska Schmid (2011),  
and updated in January 2017 by Michael Greeff and Rod Eastwood.*

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**Storage and environment:**

The collection room is located three floors below ground at Weinbergstrasse 56-58, 8006 Zurich in a climate-controlled environment currently set at  $18^{\circ}\text{C} \pm 1^{\circ}$  and  $45\% \pm 5\%$  relative humidity. This will be further reduced to  $14^{\circ}\text{C}$  and  $<40\%$  RH as we phase out residual insecticides.



*Collection room with compactus system*

The collection is housed in a steel framed compactus system with ETH standard glass-topped drawers made from natural alder and measuring 52.5 cm wide x 46 cm deep x 6 cm high. We have approximately 6000 drawers in the collection, but have expansion space up to almost 11,000. Non-standard drawers and store boxes are being phased out and we are currently converting to a unit tray storage system.



*Insect drawer with unit trays*

#### **Database:**

A database listing all known types in the collection (~5000) is accessible online at <http://www.entomologie.ethz.ch/types2.php>. In the next few years we will update all type records with images of specimens and associated pin labels.

In conjunction with the ETH digitization program the Entomological Collection is about to commence digitization. Data from about 80,000 Swiss endemic species (several orders) in the ETH collection are already databased by Centre Suisse de Cartographie de la Faune (CSCF).

**Holdings:****APTERYGOTA** [Urinsekten]

- **Size:** At least 11 wet containers, one preparation box and a few smaller containers
- **Coverage:**
  - **Switzerland:** Low
  - **Rest of the Palearctic:** Low
- **Types:** None
- **Included collections:**
  - **Schmid, Franziska:** Voucher specimens in alcohol from F. Schmid's diploma thesis (2006): Aesch Basel Landschaft, Wünnewil, Sugiez Canton Freiburg, Rafz, Büttenhardt, Ramsen, Löhningen and Rhein valley region of Canton St. Gallen.
  - **Various collectors:** 11 containers with mainly Collembola, others from various orders dried, in alcohol or as preparations, mostly undetermined.

**BLATTODEA** [Kakerlake, Cockroaches]

- **Size:** 15 drawers +
- **Coverage:**
  - Switzerland: Almost complete
  - Rest of the Palearctic: Relatively few species
- **Types:** none
- **Included collections:**
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** 12 drawers exotic species in varying condition, many larger specimens.
  - **Various collectors:** small numbers dried or in alcohol and some preparations.
  - **Undetermined:** 1 drawer
- **Comments:** Schulthess collection is both historically and scientifically important.

**COLEOPTERA** [Käfer, Beetles]

- **Size:** 397 standard drawers, 157 vintage oak wood drawers, 142 Laupen-drawers, 1083 small Laupen-drawers, 160 smaller drawers ++
- **Coverage:**
  - **Switzerland:** Very good.
  - **Rest of the Palearctic:** Very good for the major taxa
  - See included collections for details
- **Types:** many
- **Included collections:**
  - **Bänninger, Max (1884-1964):** Swiss collection in 24 drawers with Carabidae, Cerambycidae and few specimens from other families. It includes a collection of *Nebria* of special relevance (examined by Ch. Huber, Bern, 1995-1997). World collection in 120 drawers ordered by faunistic regions. Some genera are represented very strongly (*Nebria*, *Omophron*, *Scarites*), others appear in small numbers. Well labeled, mostly det. Bänninger. A great number of types (see Erwin & Halpern 1978).
  - **Barbalat, Sylvie:** Donation to ETH in 2004; Buprestidae and Cerambycidae from the Thurauen area.
  - **Born-Moser, Paul (1859-1928):** Palearctic collection of *Carabus*, *Cychrus* and *Calosoma*. This is a special collection of around 60,000 specimens, which was

- arranged in 1928. The rest of Born-Moser's specimens went almost exclusively to the Museum of Natural History in Vienna. Generally, large series of single species from many locations. The labels consist of numbers, which can be decoded using Born's hand-written lab journals. Small number undetermined. Some types.
- **Carron, Gilles:** Donation to ETH in 2009/2010, 16 smaller drawers with Hydrophilidae from western Switzerland and France. Swiss specimens databased by CSCF.
  - **Escher-Zollikofer, Heinrich (1776-1853):** World collection of approx., 46,500 mostly larger beetles from Carabidae, Scarabaeidae, Buprestidae, Elateridae, Curculionidae and Chrysomelidae. Many specimens undetermined, others labeled with a number, which may be interpreted from Dietrich's lab journals. Historically important collection and includes material collected by Weilenmann and Pernambuco.
  - **Günthart, Ernst (1917-1990):** Specimens from agricultural experiments, which were integrated into the main collection ("Neue Paläarktische Coleopterensammlung).
  - **Heer, Oswald (1809-1883) & Dietrich, Kaspar (1818-1878):** Very old collection, locations encoded and subsequently excerpted from the handwritten catalog "Catalog der allgemeinen Coleopteren Sammlung". Many Dietrich specimens from "Nürensdorf" (canton Zurich). Heer types are stored separately and many have been revised by specialists. A summary of the Heer types including original descriptions, current names and locations can be found in Schmid (2013).
  - **Huguenin, Gustav (1841-1920):** Collection in 623 Laupen drawers, mainly from the western Palearctic including a remarkable portion of Mediterranean species (Syria, Turkey, Algeria, southern France, Pyrenees), as well as many species from the eastern Palearctic (Amur, Caucasus). Many specimens bought from Reitter. Location labels are difficult to read (for example: in Switzerland, Weissenburg im Simmental is abbreviated Wsb, Weissbg, Weissburg; Zurich is abbreviated Zch, Zür, Zh; in Italy, Ospedaletti is abbreviated Osp; Ajaccio in Corse with Ajac, etc.). Only very few specimens per species. Many undetermined, some labeled as types or with taxon labels followed by the term "mihi" (i.e. named by me); however, type status is doubtful.
  - **Meier, Claude (\*1950):** Villnachern project published by Meier *et al.* (1989), including results of the 1986 diploma thesis by C. Kunz in Entomology ETH.
  - **Naglis, Stefan (\*1958):** Curculionidae from Switzerland.
  - **Sauter, Willi (\*1928):** Specimens from various locations, mostly from excursions with students to the Alps (Zuo, Z, Samedan, Piora, Rigi, Visperterminen)
  - **Schoch, Gustav (1833-1899):** 28 drawers contain a collection of world Cetoniinae (Scarabaeidae). Some types from Africa partially revised by Holm (S. Africa). Some poorly labeled but impressive specimens.
  - **Linder-Hebeisen, Arthur (1901-1977):** Important Swiss reference collection with more than 5,000 species, i.e. 80% of the native species! Duplicate specimens were donated to the Museum of Natural History in Bern. Most determined by Linder but Dieckmann determined Curculionidae and Scheerpeltz determined Staphylinidae. Mixed labeling. Typical locations are Uetzingen, Aarberg (Canton Bern); Waadt, Graubünden, Ticino (Canton Wallis); few specimens from central and eastern Switzerland. In recent years C. Besuchet (Geneva) or other specialists determined many of these specimens. Data from these specimens are recorded in the CSCF database.

- **Stankowski, Bert (1952):** A collection featuring "large" specimens from Canton Zurich (Rüti, Bubikon, etc.) and many undetermined tropical species.
- **Vodoz, G. (1873-1904):** 37 drawers of assorted beetles exclusively from Corsica. Excellently labeled and prepared.
- **Wolf, Johann Peter (1896-1974):** Quite extensive collection of various families. Most specimens determined by Wolf, many specimens purchased from Kardasch (head forester) from Sudetenland - often from "Trencin". Many specimens determined by him; some Swiss specimens were revised by Besuchet and colleagues for the "Schweizer Käfer Atlas" (Catalog of Swiss beetles); Curculionidae determined by Scherler. Origin of specimens: Basel and Jura of Basel/Solothurn (e.g. Hofstetten), Alsace, Kaiserstuhl (e.g. Neuenburg) and lowlands of the upper Rhine (Istein/Freiburg im Breisgau; Efringen); then Davos, Landwassertal (Wiesen, Brienz, Glaris, Tiefencastel, Schinschlucht), Domleschg (Rothenbrunnen), Wallis (Salgesch), Ticino. Exact locations are often abbreviated and have to be decrypted with a detailed map (1/25,000). All specimens are glued to plates and in very good condition. Data from Besuchet recorded by CSCF.
- **World collection:** Mixed Scarabaeidae, Lucanidae, Cerambycidae and Buprestidae in 16 drawers. Contains biggest, most colorful and most bizarre beetles with limited scientific value.
- **World Tenebrionidae:** In 64 drawers. Huguenin integrated specimens from the Escher-Zollikofer collection, other collections and his own into a collection of world Tenebrionidae. Over the last decades, the collection has been rearranged and is now stored in standard drawers with new labels. Many undetermined.
- **Student collections from ETH:** Miler (Marcel Miler, ETH diploma thesis 1994; Curculionidae, Domleschg around Rothenbrunnen, det. Scherler; Schneider (Curculionidae, Reusstal around Rottenschwil, Unterlunkhofen); Thomas Gloor ETH diploma thesis 1996, Carabidae from Merishausen, Sieblingen, Hemmental in Canton Schaffhausen, det. Marggi; Rust, Carabidae from Canton Zug and Zurich, Sihlwald region, det. Marggi; Romano De Marchi diploma thesis 1991, various beetles on compost heaps, Zurich, partly det. Kiener; Schibli, Carabidae from Reusstal in Uri; Gassmann diploma thesis 1968, Hydrophilidae, Klotener-Ried, and dissertation, corresponding genitalia preparations Präp. (PG 1-1800); Thomas Dalang (\*1949), Carabidae, Reppisch region above Dietikon near Birmensdorf (cantons Zurich / Aargau); Igor Kramer ETH diss. no. 11046 (1995), Carabidae from canton Zurich, Aargau: Birr, Oberglatt, Schöfflisdorf, det. Marggi; Schmid (Marion Schmid: Some Carabidae from the floodplains in Geroldswil collected in 2011).
- **Undetermined:** 16 drawers of Palearctic and 15 drawers of exotic specimens +.

## DERMAPTERA [Ohrwurm, Earwigs]

- **Size:** 8 drawers +
- **Coverage:**
  - Switzerland: Complete
  - Rest of the Palearctic: Approximately ¼ of all species
- **Types:** None
- **Included collections:**
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** 4 drawers of exotic Dermaptera from different biogeographical regions; scientifically and historically significant.
  - **Various collectors:** Dried specimens from Switzerland and Palearctic

## DIPTERA [Fliegen, Flies]

- **Size:** 443 standard drawers, 19 smaller boxes and drawers +
- **Coverage:**
  - **Switzerland:** Very good for some families of flies, poor representation in some families especially of mosquitoes
  - **Rest of the Palearctic:** poor, few Mediterranean species; good collection of Tephritidae
- **Types:** From many families; the most important ones from Macquart described by Bremi; Cecidomyiidae described by Bremi and are in his collection; Bezzi coll. Escher-Kündig, different families, e.g. Tephritidae, Asilidae; Merz (Tephritidae), Bergroth and Huguenin (coll. Huguenin, Tipulomorpha), Beschovski (leg. Merz, Chamaemyiidae), Naglis (exotic Dolichopodidae).
- **Included collections:**
  - **Bremi-Wolf, Johann Jacob (1791-1857):** 20 drawers, generally in poor condition with poor data. Historically and scientifically valuable as there are many types (Tachinidae described by Macquart, revised by Hertig (1970). Cecidomyiidae described by Bremi (1847), partially revised by Gagné (2014).
  - **Cuny, Robert:** Preparations of Calliphoridae from his diploma thesis (1975) on the fauna of the Lägern at the Entomological Institute ETH.
  - **Escher-Kündig, Jakob (1842-1930):** Comprehensive collections from different regions in Switzerland (Andeer, Bérisal, Brünig, Bigniaso, Novaggio, Zurich), Germany (Ems, Schluchsee), Italy (above Bozen - written as "Ob. Boz."), Spain (Ronda), Algeria. Many specimens determined by M. Bezzi (thick ink pen writing on reddish labels). In addition to the geographic names, consecutive numbers were given to the specimens. A catalog lists all numbers and specimens and occasionally provides additional information. Some of the types described by Bezzi are present.
  - **Günthart, Ernest (1917-1990):** Specimens with good label data were integrated into the main collection; 10 small drawers; flies (mostly Anthomyiidae, Muscidae) from agricultural experiments on pests, labels with codes, which are undecipherable.
  - **Huguenin, Gustav (1841-1920):** Mostly Nematocera and lower-order Brachycera, few Cyclorrhapha. Green labels from Weissenburg im Simmental (see Coleoptera), together with a collection with small white labels from 1875-1895 from Wallis (Granges, Salgesch, Pfynwald, Niouc, Sierre, Sion, Alp Ponchette, Susten: Specimens collected most likely by M. Paul). Huguenin published on Tipulidae and Limoniidae (Huguenin 1888)



- **Reith, Martin:** Donated to ETH in 2012, smaller collections mainly from Germany, few from USA, Morocco and Spain. Some undetermined.
- **Merz, Bernhard Felix (\*1963):** Very extensive collection of Tephritidae from the western Palearctic from his dissertation, ETH 9901 (Mertz 1994). The collection contains 10 holotypes. Many specimens from many families of flies, especially from Hybotidae, Empididae, Syrphidae, Acalyptrata, Sarcophagidae, and Fanniidae.
- **Naglis, Stefan (\*1958):** 1 drawer of exotic Dolichopodidae, including his types.
- **Raboud, Gregoire (\*1952):** Genitalia and alcohol material of Culicidae from his diploma thesis sites in the region of Poutafontana near Grone (Wallis, between Sion and Sierre).
- **Zürcher, Leo (1884-?):** Comprehensive collection of Chloropidae from the region around Aarau and Lenzburg. The collection was revised by Duda and contains some types.
- **Student collections:** Sabathy - Syrphidae from Zürcher Weinland (Zurich), Andelfingen, Buch am Irchel, Teufen, Flaach, Ellikon; Kirstine Porta-Campbell diploma thesis, ETH 1997 - Syrphidae from Toggenburg (St. Gallen), Wattwil, Unterwasser, Chäserrugg, Hinterrugg; Birgit Botta diploma thesis, ETH 1997 - Rhinophoridae, Tachinidae from Zurich; Peter Andreas Rüegg diploma thesis, ETH 1995 - various families of Diptera from Sihlwald; Renate Braun diploma thesis, ETH 1995 - various families of Diptera from Lindau/Eschikon; Mermod - Calyptrata from the Alps, Gemmipass (Wallis), Melchsee-Frutt (Lucerne), Zermatt (Wallis).
- **Alcohol collection:** Karin Schiegg, diss. ETH no.13236, 1999, 44 containers with specimens from Sihlwald; Beat Wermelinger (\*1957), 2 containers with specimens taken from galleries of bark beetles in Schwanden, canton Glarus; various collectors and locations (9 containers).
- **Undetermined:** 11 + standard drawers and 19 smaller drawers / boxes and 4 boxes of unsorted alcohol material.

## **EPHEMEROPTERA** [Eintagsfliegen, Mayflies]

- **Size:** 1 drawer +
- **Coverage:**
  - **Switzerland:** Very incomplete; some specimens from locations where they are not found today
  - **Rest of the Palearctic:** No specimens
- **Types:** None
- **Included collections:**
  - **Meyer-Dürr, L. Rudolf (1812-1885):** Very few specimens, probably from Burgdorf
  - **Ris, Friedrich (1867-1931):** Few specimens, mostly from the area around Zurich (Katzensee, Limmat)
  - **Sauter, Willi (\*1928):** A few specimens from Illnau
  - **Alcohol material** from different collectors and locations
- **Comments:** The collection is very small. Some specimens were investigated by V. Lubini (Zurich) and M. Sartori (Lausanne) around 1996. These data are mostly recorded in the CSCF database.

## HEMIPTERA [Schnabelkerfe, Bugs]

### AUCHENORRHYNCHA

- **Size:** 25 drawers +
- **Coverage:**
  - **Switzerland:** Somewhat complete, although incomplete in Cicadellidae and in some hard to find families.
  - **Rest of Palearctic:** Almost no material
- **Types:** None
- **Included collections:**
  - **Rebetez, Denis:** Diploma thesis (1967) specimens from Klotener Ried (Entomology ETH), det. Rebetez, Sauter and Günthart.
  - **Sauter, Willi (\*1928):** Many from Illnau (ZH), and from the Alps (cf. Heteroptera), mostly det. Sauter, few specimens in alcohol.
  - **Wolf, Johann Peter (1896-1974):** Leg. and det. Wolf (?), locations mostly Wallis, Ticino, Davos region, Domleschg and Basel region including the lowland of the upper Rhein Valley (Alsace, Kaiserstuhl)
  - **Old collection:** Small collection from various collectors, e.g. Dietrich, Frey-Gessner (1826-1917) and Meyer-Dür (1812-1885). Some locations were excerpted from the collection catalog of Dietrich (ca. 1875).
  - **Exotic collection:** Old collection with 5 drawers of attractive exotic specimens (Cicadidae, Fulgoridae); specimens from the Escher-Zollikofer collection as well as from Bremi, Huguenin, etc. Generally poorly labeled.
  - **Undetermined:** Approximately 4 drawers
- **Comments:** Basically a local Swiss collection; most of the specimens come from the diploma thesis by Rebetez.

### HETEROPTERA

- **Size:** 76 drawers, 5 smaller drawers, 2 preparation boxes and some alcohol material
- **Coverage:**
  - **Switzerland:** Very good
  - **Rest of the Palearctic:** A few Mediterranean species
- **Types:** A few paratypes from Wagner (apparently purchased by Wolf).
- **Included collections:**
  - **Dietrich, Kaspar (1819-1878); Frey-Gessner, Emile (1826-1917); and Meyer-Meyer-Dür, L. Rudolf (1812-1885):** Small collections often badly labeled. Locations excerpted from the Dietrich catalog.
  - **Di Giulio:** Specimens from his doctorate in the Randen area in Canton Schaffhausen.
  - **Escher-Zollikofer, Heinrich (1776-1853); Huguenin, Gustav (1841-1920); Bremi-Wolf, Johann Jacob (1791-1857):** Exotic collections stored in 11 drawers have never been revised! Very incomplete, includes a small selection of attractive specimens from tropical regions and some specimens from Algeria.
  - **Kunz, Caroline:** Kunz 1986 Diploma thesis at the Entomological Institute ETH from Villnachern (Meier *et al.* 1989).
  - **Maurer, Hans-Rudolf:** Collected at Uetliberg (diploma thesis at the Entomological Institute ETH, 1964/65) and at Klotener Ried (unfinished doctorate thesis at the Entomological Institute ETH). Includes some preparations.
  - **Otto, Achim:** ETH dissertation 11457 (1996) specimens from the Reuss valley and various locations in Ticino. Leg. Ladislaus Reser, published in Otto & Rezbanyai-Reser (1996).

- **Sauter, Willi (\*1928) & Merz, Bernhard Felix (\*1963):** mostly det. Otto. Collected at different sites in the Alps (mostly Visperterminen, Samedan, Piora, Zuoz: student excursions).
- **Wolf, Johann Peter (1896-1974):** Determined by Wolf, numerous revisions by Otto. Locations: Alsace, lowlands of the Upper Rhine area (Kaiserstuhl), Basel region, Davos region and Domleschg, Wallis, Ticino.
- **Undetermined:** 8 drawers and some alcohol material.
- **Comments:** Includes the most comprehensive collection of bugs from Switzerland. In most cases specimens are excellently labeled and determined, apart from Nepomorpha, which were revised incompletely.

#### STERNORRHYNCHA

- **Size:** 9 drawers, 7 preparation boxes, 4 alcohol containers
- **Coverage:**
  - **Switzerland:** Good
  - **Rest of the Palearctic:** Almost nothing
- **Types:** 1 holotype (*Arytaina hispanica*) from Spain, 1 paratype (*Notophorina magna*) from South America.
- **Included collections:**
  - **Burckhardt, Daniel Hieronimus (\*1953):** Several specimens from the diploma thesis (1977) at the Entomological Institute ETH (Reuss valley in Canton Aargau) and various collections mostly from the cantons Wallis, Waadt, Ticino, Lucerne (partially DISS ETH 7262, 1983); all det. Burckhardt and a container with Aphidae in alcohol and preparation of Psyllidae.
  - **Dorn, Brigitte Therese (\*1971):** 1 alcohol container of Pseudococcidae from Columbia from her dissertation at the Institute of Applied Entomology, ETH (2001).
  - **Holdenrieder, Ottmar (\*1954):** Old gall herbarium probably from Germany, inter alia with galls from Coccoidia mainly from Germany and Austria but also from the rest of the world.
  - **Merz, Bernhard Felix (\*1963):** Comprehensive collections from various excursions in Switzerland, and to a lesser extent from the Mediterranean area (Canaries, southern Italy, southern France, Turkey, Israel, central Asia) and from Eastern Europe (A, H). Mainly bycatches while looking for Tephritidae (Diptera). All det. Burckhardt.
  - **Sauter, Willi (\*1928):** Alcohol specimens of Coccoidia and Psyllidae. Some Aphididae determined by W. Meier (Forschungsanstalt Reckenholz).
  - **Meyer-Dür, L. Rudolf (1812-1885); and Dietrich, Kaspar (1819-1878):** Old specimens in mixed condition and with limited data, some locations excerpted from Dietrich catalog.
  - **Undetermined:** 2 drawers and 1 preparation box

#### HYMENOPTERA [Wespen und Bienen, Wasps and Bees]

- **Size:** Approximately 840 standard drawers, more than 50 smaller formats, some alcohol material ++
- **Coverage:**
  - **Switzerland:** Very good in the Apiformes; apart from Ichneumonidae and certain Terebrantes, rather good coverage for the rest
  - **Rest of the Palearctic:** Apiformes very good, rest mixed

- **Types:** Many Chalcidoidea from Delucchi, some Aculeata in the collection Nadig and bees from Müller and PhD students; in addition, the Schulthess collection has many types that were described by Schulthess, Blüthgen, Fritz and many other researchers at the time.
- **Included collections:**
  - **Delucchi, Vittorio (1925-2015):** Comprehensive Chalcidoidea collection (mainly Pteromalidae, Eulophidae), mostly det. Delucchi or Baur; the whole collection was revised by Baur, especially the types (~100 specimens) (Bauer 2001) mainly from Switzerland and the Mediterranean area (Morocco, Italy, southern France). Corresponding preparations of types are included, and in some cases only the prepared remnants remain! Many specimens with poor labels are not integrated.
  - **Warnke, Klaus (1937-1993):** Donated duplicates of the genus *Andrena* including some paratypes. The specimens are mostly from Turkey.
  - **Holdenrieder, Ottmar (\*1954):** Old gall herbarium in 6 separate plastic boxes. The galls are mainly from Germany and Austria, a few as well from worldwide locations. This herbarium was saved from disposal years ago by O. Holdenrieder at a German university and donated to us.
  - **Kutter-Trüb, Heinrich (1896-1990):** Reference collection of Formicidae (Kutter 1977). Specimens of almost all Swiss species.
  - **Krebs, Albin (\*1931):** Valuable collection of Aculeata, almost exclusively bred from various media (deadwood, blackberry stalks, sand). Locations mainly Zürcher Unterland and Zürcher Weinland: Teufen, Andelfingen, Agasul (near Illnau), Stammheim, Nussbaumen; canton Wallis: Pfynwald; bees and wasps from northern Switzerland.
  - **Müller, Andreas (\*1968):** Collection of Apidae in 123 drawers ++. Very nice Palearctic collection especially Osmiini as well as some from northern America and South Africa. Many bees from collection trips with PhD students including Praz & Sedivy.
  - **Nadig, Adolf sen. (1877-1960) and Nadig, Adolf jun. (1910-2003):** Very comprehensive collection of Symphyta and Aculeata, represent approx. 80% of all specimens in this collection. Generally det. Nadig, and other specialists at the time; many Swiss Apoidea det. Müller; Aculeata (without Apoidea) det. Ungricht. Specimens from around Chur (Haldenstein, Fürstenwald, Felsberg, Zizers, Trimmis, Scheid), Misox (Roveredo, Grono), Wallis (Euseigne, Follateres, Pfynwald), Engadine (Zernez, Zuoz, Ramosch=Remüs). Specimens also from Italy (Pisa, Pusiano, Bozen), Corsica, Sardinia, Morocco. Many specimens have been re-determined by Müller. Most data from Apoidea are recorded in CSCF database. Some types.
  - **Nadig, Adolf (1910-2003):** Hymenoptera from the western Palearctic.
  - **Oertli, Sabine:** ETH Dissertation 15854 (2005), comprehensive voucher collection of bees from canton Wallis.
  - **Praz, Christophe:** ETH Dissertation 17800 (2008), bees from Switzerland, Greece, Tunisia and Jordan.
  - **Schmiedeknecht, Otto (1847-1936):** Several Ichneumonidae and Braconidae from Thuringia
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** 179 standard drawers comprising a world collection. It includes the following:
    - 1. Symphyta: Mainly from Switzerland, very few types (exotic specimens)
    - 2. Pompilidae: World collection including some drawers from Pepsis, few types. Partially revised by Vardy (London).
    - 3. Sphecidae: World collection. Some types revised by Bohart (USA).

4. Vespoidea: World collection, very comprehensive and important as it includes many types. Schulthess especially focused on this family and collected particularly Eumenidae. Many types from worldwide locations revised by Giordani, Stoika, Gusenleitner, Blüthgen; however, many more have not been revised.
  5. Scoliidae, Tiphidae, Sapygidae, Mutillidae: Especially Scoliidae and Mutillidae very abundant, few types. Mutillidae have been partially revised by Pedersen (DK), Nonveiller (YU).
  6. Nests from Vespoidea.
  7. Apidae: World collection with a focus on Europe and northern Africa; only in *Bambus* and *Xylacapa* good representation worldwide. Few types in the last-mentioned genera. *Andrena* revised by Warncke (D); Colletidae, *Sphecodes* (only Switzerland) revised by A. Müller, data recorded at CSCF. Some of the bees have been integrated into the main collection.
  8. Chrysididae: World collection focusing on Europe and northern Africa. Few types. Revised by Linsenmaier.
  9. Parasitica: Mostly Gasteruptionidae, Evaniidae; Chalcidoidea integrated into the main collection.
- **Wolf, Johann Peter (1896-1974):** Specimens from Basel, Jura of the cantons Basel and Solothurn (e.g. Hofstetten), Alsace, Kaiserstuhl (e.g. Neuenburg) and lowlands of the upper Rhine Valley (Istein/Freiburg im Breisgau; Efringen); as well as insects from Davos, Landwassertal (Wiesen, Brienz, Glarus, Tiefencastel, Schinschlucht), Domleschg (Rothenburg), Wallis (Salgesch), Ticino. The exact locations are often abbreviated and must be deciphered with a detailed map (1/25,000). Formicidae det. Donat Agosti; many Apoidea det. Müller. Many specimens are glued to plates and are hard to determine.
  - **Student collections from ETH:** Anic Ostertag, term paper 2012, Flaach; Bruno Peter, donation to ETH (2008) Symphyta, Uetliberg; Ali Salvioni (aculeate wasps, Roveredo, S. Vittore and Biasca, and tropical Pompilidae, probably integrated in the Schulthess collection); Stefan Ungricht ETH diploma thesis 1995, aculeate wasps, Zurich; Marco Bernasconi ETH diploma thesis 1993, Apoidea, Zurich; Agosti (Formicidae, Merishausen canton Schaffhausen); Simon Bieri donation to ETH in 2003, Aculeata from Liechtenstein; Alexandra Breitenstein ETH diploma thesis 2003, Aculeata from canton Wallis.
  - **Smaller collections** by Franziska Schmid, donation to ETH (2012); Schinznach-Dorf; Martin Reith, donation to ETH (2012), mainly from Germany, few from USA, Morocco and Spain; Peter Schär donation to ETH (2012), mainly from Switzerland, few from Italy, Spain and Malta; Willi Sauter, student excursions; Bernhard Merz, different locations in Switzerland; Andreas Müller, mainly from Monte Gargano, Italy / exchange of duplicates from the Nadig-collection - Aculeata from Switzerland.
  - **Undetermined:** Approximately 54 standard drawers and many smaller drawers, specimens mostly sorted to families. The following are separated:
    1. 33 standard drawers, of which 14 drawers belong to the Bremi collection (according to the handwriting and arrangement set up by Bremi general Hymenoptera collection) and 19 drawers probably belong to the collection donated by Schulthess/Nadig (this collection was donated by Schulthess to A. Nadig. Following the death of A. Nadig senior, A. Nadig junior gave it back to the ETH, apparently without further revision. It is an unsorted potpourri probably containing many duplicates).

2. World collection of ants (13 drawers). Possibly specimens from Huguenin ("Algerien") and Escher-Zollikofer; based on handwriting some specimens might be Forel's. Labeling generally poor, many specimens with no data.
  3. 8 drawers from various regions worldwide.
- **Comments:** The Schulthess collection is probably the most important collection of the ETH in terms of types; the special collection of Vespoidea is very extensive. Specimens are mostly labeled; however, for decoding of some locations specialist knowledge is required. Important specimen locations include: Canton Wallis: Kippel, Berisal, Vissoie, Pfynwald; canton Bern: Weissenburg i.S., Bern (leg. Steck); canton St. Gallen: Vättis "Exotische Fundorte" from Thuringia (leg. Schmiedeknecht), Transvaal (S.Afr.), Sarepta (near Volgograd), Bengasi (Libya), Sicily, Philippines, Provence (e.g. Hyeres).

#### **ISOPTERA** [Termiten, Termites]

- **Size:** 1 drawer +
- **Coverage:**
  - **Switzerland:** -
  - **Rest of the Palearctic:** -
- **Types:** None
- **Included collections:**
  - Very few specimens by various collectors; dried, in alcohol or single preparations in preparation boxes.

#### **LEPIDOPTERA** [Schmetterlinge, Butterflies and Moths]

- **Size:** 2003 standard drawers, 209 smaller drawers, 49 mixed drawers ++
- **Coverage:**
  - **Switzerland:** Very good
  - **Rest of the Palearctic:** Relatively good
- **Types:** All specimens described by Weber (1945), as well as some specimens from Müller-Rutz (1922, 1927) & Vorbrodt (1921, 1925) and Vorbrodt & Müller-Rutz (1917). The Seiler collection includes types from Sauter's dissertation and 13 holotypes (Psychidae from Switzerland, Greece, Spain and New Zealand) from P. Hättenschwiler; 2 drawers of species/subspecies described by Burgeff, which have been revised and labeled by C. Naumann (Bonn). Additional types are found in the old Palearctic Macrolepidoptera collection and in the Biedermann collection.
- **Included collections:**
  - **Biedermann, Robert (1869-1954):** A world collection of great beauty, gathered from an aesthetic, less scientific point of view. Mostly containing butterflies and moths but almost no Geometridae or Noctuidae. Good condition and mostly well labeled.  
Additional specimens in Palearctic Collection (green framed labels): Switzerland, Vintschgau (Sonnenberg near Naturns). Among them are many that have been bought from (?) Lorez. All of these collections probably revised by Weber; some taxa were again checked by Sauter. Part of the Sesiidae, Biedermann has acquired from LeCerf.
  - **Birchler, Alfons (1905-1983):** Swiss Macro- and Microlepidoptera collection (approximately 17,000 specimens) in 80 wooden drawers and 58 Laupen boxes assembled during the years 1930 to 1980 mostly from Reichenburg, Canton

- Schwyz. Collection donated by his son, Maurus Birchler in 2016; all specimens with full data.
- **Bovey, Paul (1905-1990):** 46 drawers of *Zygaena* from crossing experiments at the ETH, many without locality data.
  - **Burgeff, Hans (1883-1976):** 51 drawers ++ of Palearctic Zygaenidae including genital preparations of the lectotypes of species described by Burgeff and prepared by C. Naumann (Bonn). The collection contains material from all over the Palearctic including many bred specimens. It contains only red *Zygaena*.
  - **Carpentier, Fritz (1873-1968):** Palearctic Macrolepidoptera collection in 107 drawers. Carpentier wanted to build a Palearctic Macro collection as complete as possible. There are 1-2 pairs of each species. Unfortunately, most of Carpentier's original labels were removed by one of his employees and replaced by less precise, but "more aesthetic" labels!
  - **Culatti, Josef (1890-1981):** Contains many Macrolepidoptera from around Zurich (especially Höngg), Minusio (Ticino), Oberstalden (Wallis). Det. by Culatti, and others.
  - **Escher-Zollikofer, Heinrich (1776-1853):** 67 drawers containing the remains of the original collection of Escher-Zollikofer-world collection. Weber transferred useful specimens of some families into the "Biedermann Collection". Thus, this collection contains mostly duplicates and the poorly preserved specimens.
  - **Eschle, Herbert (1929-2015):** Collection of mostly exotic Macrolepidoptera in 73 drawers donated in 2016. Many CITES listed species now integrated with the Biedermann Collection.
  - **Farmer, René (1902-1990):** Macrolepidoptera from Zurich (Wollishofen), Mendrisio (Ticino) and Ausserberg (Wallis), and many other localities. det. Pleisch (Farmer did not determine insects himself)
  - **Florin, Janett (1917-1996):** Macrolepidoptera from Switzerland (Eastern Switzerland: Chur, St. Gallen, Rheintal, Wallis: Brigerbad, Simplon). Det. Florin and Pleisch (especially specimens which were difficult to identify)
  - **Frey, Heinrich (1822-1890?):** Butterflies from Switzerland
  - **Gubser, Hans Werner Felix (1910-1976):** 17 drawers of Lepidoptera from Switzerland and adjoining areas; well preserved with full data.
  - **Haaf, Erwin:** Burgeff's student, Haaf did his doctoral thesis (around 1950) on Zygaenidae and stored preparations in cardboard envelopes. Both specimens and preparations have codes, which allows the identification of the corresponding items.
  - **Hohl, Markus:** Dissertation from ETH (2006). 5 drawers with Lepidoptera from Grindelwald and Tujetsch.
  - **Holliger, Kurt (1930-2015):** Macrolepidoptera collection in 88 drawers donated in 2016, all with good data. Mostly Swiss but includes butterflies collected by Holliger in Italy, Spain, Yugoslavia, France, and Germany. Also many tropical species in 38 drawers collected by Holliger and Zaugg.
  - **Hopf, Hans (1883-1969):** Macrolepidoptera donated in 1967, mainly from Mürren, Bern. det. Sauter, Schmidlin (?).
  - **Horak-Kaenel, Marianne:** 12 drawers of Lepidoptera, especially Microlepidoptera from Papua New Guinea, New Zealand. Mostly undetermined except for some Tortricidae.
  - **Huguenin, Gustav (1840-1920):** Microlepidoptera - green labels indicate specimens from Weissenburg im Simmenthal. Additional specimens in Palearctic Collection (with red "H" on the location label): green labels indicating

- Weissenburg im Simmental, bright labels indicating insects from Zurich. Many from the Mediterranean region (Algeria, Italy, Spain, France), Caucasus, Sarepta (Russia around Volgograd) and the Eastern Palearctic ("Amur") region.
- **Leiser, Gottfried (1914-2004):** Collection of mostly Swiss Macrolepidoptera in 60 drawers donated by his son Gottfried Leiser (Jr.) in 2016. Many specimens were collected in Wallis from the early 1960's to 1980's. Some specimens from Julius Lampart (1919-2006) and Ulrich Pfyffer (1908-1991).
  - **Naglis, Stefan (\*1958):** Swiss Tortricidae.
  - **Plaut:** Macrolepidoptera duplicates from Israel sent to Sauter for determination.
  - **Pleisch, Eugen (1932-2015):** Macrolepidoptera exclusively from Switzerland.
  - **Sauter, Willi (\*1928):** Collection of Microlepidoptera sorted according to their families and stored in 7 standard drawers. These specimens are mainly from the Lower Engadine (Sauter 1993) and from canton Thurgau. There are also some from Israel, leg. de Bros (Emmanuel Bros de Puechredon, 1914-1997). The collection contains additional voucher specimens Sauter has not included in his own collection, but which are faunistically interesting. Some specimens from Brazil. Also contains duplicates from various Macrolepidoptera collections (many of them from canton Zurich: Volketswil-Homberg, Hochfelden, Illnau), determined by Sauter.
  - **Schnäbeli, P.:** Mainly Swiss Lepidoptera, donated to ETH in 2002.
  - **Seiler, Jakob (1886-1970):** special collection of *Solenobia* (Lepidoptera, Psychidae) in 23 small drawers, 13 boxes and 3 vials of alcohol preparations. The experimental collection was used as a basis for Sauter's dissertation (Diss ETH 2504). It serves as a voucher collection of these experiments and for taxonomic studies. It contains the types determined by Sauter and the corresponding preparations. A separate collection of alcohol preparations with larvae and pupae as well as parasites is stored within the Lepidoptera alcohol preparations.
  - **Stahel, Hans-Beat (1910-1990):** Macrolepidoptera collected in Rämismühle near Zell (Tösstal, abbreviated in the location label with "RM"); also numerous undetermined insects from Rämismühle.
  - **Standfuss, Maximilian (1854-1917):** 102 drawers of Microlepidoptera of various provenances now in the Palearctic collection. Also a comprehensive experimental collection of hybridizations (Saturniidae and Sphingidae) and tests on the effects of temperature differences in the larval stages on adult morphology.
  - **Stankowski, Bert:** Macrolepidoptera collected mainly in Zürcher Oberland (Hombrechtikon, Rüti, Dürnten), det. Stankowski (?). Donated to ETH in 1994.
  - **Steiner, Eduard (1907-1979):** Collection of Macrolepidoptera from Switzerland and adjoining countries in 120 small drawers. The collection was acquired from Steiner's widow by Heinrich O. Weidmann after the untimely death of Steiner and donated to ETH in 2016.
  - **Stoll, Otto (1849-1922):** Approximately 5,000 Macrolepidoptera from Switzerland.
  - **Tanner, Gottfried:** Small collection of Swiss Lepidoptera donated by Frau Gertrud Tanner in 2016.
  - **Turati, Gianfranco (1861-1905):** Microlepidoptera from Northern Italy and Hungary. Additional specimens in Palearctic Collection (labeled with "T"): Switzerland and northern Italy.
  - **Weber, Paul (1881-1968):** 119 small drawers of Microlepidoptera and a corresponding collection of preparations. Almost exclusively specimens from Switzerland. In most cases species are represented by a maximum of 12



individuals. Locations vary, important places in Zürich are: Uetliberg, Regensdorf, Katzenssee, Altburg near Weiningen, Boppelsen, Dielsdorf; in Wallis: Simplon, Euseigne, Oberstalden, Berisal; further locations in Ticino and Graubünden. Many insects were bred and are stored together with their cocoons. Weber's catalogue in the archive provides further information, particularly breeding data.

Small, carefully labeled herbaria, which shows insect feeding damage. The locations are mainly from around Zurich, but also from other parts of Switzerland. 149 drawers of Macrolepidoptera from Switzerland including many specimens bought from Staudinger, but also exchanged with Klimesch. Rare species and special findings were published by Müller-Rutz (1922, 1927) & Vorbrodt (1921, 1925) and Weber (1945) in the "amendments".

- **Weber-Beglinger, Fritz (1906-1981):** Captured and bred Macrolepidoptera mainly from canton Glarus.
- **Widmer, Luzia:** Diploma thesis done at Reckenholz in 2000, contains butterflies from the Schaffhauser Randen.
- **Wolf, Johann Peter (1896-1974):** Macrolepidoptera from: Basel and the Basel / Solothurn Jura (e.g. Hofstetten), Alsace, Kaiserstuhl (e.g. Neuchâtel) and Oberrhein. From the lowlands of the upper Rhine (Istein /Freiburg in Breisgau; Efringen); as well as from Davos, Landwassertal (Wiesen, Brienz, Glarus, Tiefencastel, Schinschlucht), Domleschg (Rothenburg), Wallis (Salgesch), Ticino. The exact locations are often abbreviated and must be deciphered with a detailed map (1/25000). Nearly all Swiss insects were probably determined by Wolf.
- **Zaugg, Paul (1913-1985):** Macrolepidoptera from different regions in Switzerland (many from Mergoscia (Ticino), a few from Japan & Korea determined by Pleisch, Zaugg, Sauter, and there are 5 smaller drawers containing mainly tropical Lepidoptera determined by Pleisch.
- **Zeller, Rudolf (1821-1897):** Various Microlepidoptera. Some Macrolepidoptera in the Palearctic collection labeled with "Z".
- **Genitalia preparations:** from various collections done by Sauter (vast majority) or by specialists. Pinned specimens are cross-referenced to the preparation with a label "GP ETH xxx". In addition, there is a box with genital preparations of Florin's Microlepidoptera. Preparations of Florin's Macrolepidoptera, done by K. Grimm (Ermatingen) are pinned with the specimens.
- **Larvae and pupae collection:** 20 drawers and a few alcohol preparations with an emphasis on central European fauna. There are exotic pupae especially for Saturniidae, Sphingidae and Bombycidae. Many specimens were contributed by W. Sauter (Illnau), as well as larvae collected and bred by P. Sauter (Männedorf), often in Misoix and Alsace (Nonnenbruch - Forest near Mulhouse).
- **Undetermined:** 9 drawers of Microlepidoptera, 33 drawers of Macrolepidoptera, 11 standard drawers of Macrolepidoptera ex. coll. P. Stolz with the following abbreviations on the labels: e.i. ex imago = as adult, e.o. ex ovo = bred from eggs, e.l. ex larva = bred from larvae, v = date of pupation, g = date of hatching, ? or PS = determined himself, AD = Altdorf, Q = Quinten, RHT = Rheintal, B'feld=Birrfeld. Some drawers from Carpentier with unsorted Macrolepidoptera, 49 Zygaenidae from Burgeff, approx., 10 drawers in the Biedermann collection. In addition, there are 67 drawers with specimens from Escher-Zollikofer (see above); 96 drawers from various collectors including:
  - 1) **Hopf, Hans (1883-1969):** A large number of specimens of Papilionidae from all over the world. Labeling is often poor.

- 2) **Schneider, Fritz (1911-1985):** In the context of a plant protection project, F. Schneider brought numerous insects from Sumatra, especially Lepidoptera (Schneider 1940). Specimens in bad condition, often incompletely labeled. The holotype of a clearwing moth (*Sura uncariae* Schneider) is missing. None of the specimens have identification labels.
- 3) **Stankowski, Bert (\*1952):** A passionate amateur collector, Stankowski mainly collected Lepidoptera and Coleoptera in Switzerland but also in the Indomalaya and Afrotropic ecozone. Specimens mostly in good condition and well labeled. Many specimens need to be determined.
- 4) **Stahel, Hans-Beat (1910-1990):** Almost exclusively Lepidoptera collected in Switzerland mostly in Rämismühle near Zell in the Töss valley, Canton Zurich, and a few from Bergün, and in Argentina. Specimens mostly undetermined, labeling poor (RM = Rämismühle!).
- 5) **Farmer, René (1902-1990):** Many specimens from Cuba, southern USA (Texas), Philippines and Brazil. Unfortunately, many specimens have poor labels.
- 6) **Fässler, S.:** A beautiful collection with specimens from India collected 1961-1969. Unfortunately, most location labels were removed, but many might be decoded.
- 7) **Bänziger, Hans (\*1941):** Malaysia, probably from diss. ETH 4683 in 1972.
- 8) **Hättenschwiler, Peter (\*1927):** various countries.

#### MANTODEA [Gottesanbeterinnen, Mantises]

- **Size:** 23 Drawers +
- **Coverage:**
  - **Switzerland:** Complete
  - **Rest of the Palearctic:** Approx. 1/4 of the species
- **Types:** None
- **Included collections:**
  - **Various collectors:** 1 drawer and some preparations in a box.
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** Historically and scientifically important collection with many spectacular specimens, not revised since Schulthess.
  - **Undetermined:** 2 drawers

#### MECOPTERA [Schnabelfliegen, Scorpion Flies]

- **Size:** 3 drawers
- **Coverage:**
  - **Switzerland:** Rather good
  - **Rest of the Palearctic:** Almost nothing
- **Types:** None
- **Included collections:**
  - **Florin, Janett (1917-1996):** mostly from eastern Switzerland, Wallis and Graubünden, det. Eglin and Florin. Donated to ETH in 1995.
  - **Ris, Friedrich (1867-1931):** mostly from the Engadine and from Zurich (Katzensee), det. Ris.
  - **Sauter, Willi (\*1928):** Smaller samples from various regions of the Alps and from around Zurich (Illnau). Det. Sauter, Lerardi or Duelli.
  - **Wolf, Johann Peter (1896-1974):** Smaller collection from Alsace, lowlands of

the Upper Rhine (Kaiserstuhl), Basel region, Davos region and Domleschg, Wallis, few specimens from Ticino, probably det. Eglin.

- **Comments:** Useful as a reference collection, but because of the fragility of the wings, many specimens are damaged.

## MEGALOPTERA [Grossflügler]

- **Size:** 1 drawer
- **Coverage:**
  - **Switzerland:** Rather good
  - **Rest of the Palearctic:** Almost nothing
- **Types:** None
- **Included collections:**
  - **Florin, Janett (1917-1996):** mostly from eastern Switzerland, Wallis and Graubünden, det. Eglin and Florin. Donated to ETH in 1995.
  - **Ris, Friedrich (1867-1931):** mostly from the Engadine and from Zurich (Katzensee), det. Ris.
  - **Sauter, Willi (\*1928):** Smaller samples from various regions of the Alps and from around Zurich (Illnau). Det. Sauter, Lerardi or Duelli.
  - **Wolf, Johann Peter (1896-1974):** Smaller collection from Alsace, lowlands of the Upper Rhine (Kaiserstuhl), Basel region, Davos region and Domleschg, Wallis, few specimens from Ticino, probably det. Eglin.

## NEUROPTERA [Netzflügler, Lacewings]

- **Size:** 18 drawers +
- **Coverage:**
  - **Switzerland:** Quite good, only Coniopterygidae are underrepresented
  - **Rest of the Palearctic:** Almost nothing (some Mediterranean specimens in the Myrmeleontidae and Ascalaphidae)
- **Types:** None
- **Included collections:**
  - **Florin, Janett (1917-1996):** mostly from eastern Switzerland, Wallis and Graubünden, det. Eglin and Florin. Donated to ETH in 1995.
  - **Ris, Friedrich (1867-1931):** mostly from the Engadine and from Zurich (Katzensee), det. Ris.
  - **Sauter, Willi (\*1928):** Smaller samples from various regions of the Alps and from around Zurich (Illnau). Det. Sauter, Lerardi or Duelli.
  - **Wolf, Johann Peter (1896-1974):** Smaller collection from Alsace, lowlands of the Upper Rhine (Kaiserstuhl), Basel region, Davos region and Domleschg, Wallis, few specimens from Ticino, probably det. Eglin.
  - **Undetermined:** 5 drawers, of which 3 drawers are exotic species with mixed labels.

## ODONATA [Grosslibellen, Dragonflies]

- **Size:** 40 drawers + preparations
- **Coverage:**
  - **Switzerland:** There are some specimens for most of the species
  - **Rest of the Palearctic:** Very poor

- **Types:** Holotype of *Anax longipes* Abbott (USA), possibly additional types.
- **Included collections:**
  - **Swiss species:** 16 drawers: mostly very old specimens (Dietrich, Breml), some specimens from Janett Florin, donated to ETH in 1995, Otto Paul Wenger (1919-1981) and other collectors (these ones are in good condition); few specimens per species.
  - **General collection:** 14 drawers: world collection includes specimens from all biogeographic regions. Mostly from H. Escher-Zollikofer (often poorly labeled), a few newer specimens from J. de Marmels (Israel) and P. Bovey (Ivory Coast).
  - **Collection of exuviae:** 5 drawers: Specimens mostly from A. Krebs, Hansruedi Wildermuth (\*1941); J. Demarmels (\*1950); and Le Yen Ha, diploma thesis, ETH 2000 (Odonata from Winterthur area). The labeling is quite sparse in parts, but specimens were collected recently.
  - **Undetermined:** 5 drawers Palearctic and exotic specimens and some exuviae.

## ORTHOPTERA [Heuschrecken, Grasshoppers]

- **Size:** 165 drawers +
- **Coverage:**
  - **Switzerland:** Rather complete and abundant in specimens
  - **Rest of the Palearctic:** Few specimens from the Mediterranean area and eastern Europe
- **Types:** Several paratypes from Ingrisch (*Poecilimon*, *Isophya*); possibly holotype of *Anonconotus alpinus* (Yersin); possibly some tropical types.
- **Included collections:**
  - **Carron, Gilles:** Comprehensive collection mostly from western Switzerland and France, donated to ETH in 2010. Swiss specimens are recorded in the CSCF database.
  - **Florin, Janett (1917-1996):** Comprehensive collection from eastern Switzerland, Wallis and Graubünden, also some Mediterranean samples (mostly Israel and southern France), the latter ones for the most part undetermined. Donated to ETH in 1995. Most specimens det. Nadig.
  - **Fruhstorfer, Hans (1866-1922):** Very comprehensive collection of Swiss species collected or purchased by Fruhstorfer, mostly from Ticino (Lugano / Mendrisiotto / Generoso) and published in Fruhstorfer (1921). Many have been revised by Nadig, Ingrisch and Thorens, and recorded in the CSCF database (see Thorens & Nadig 1997). Additional specimens and all of Fruhstorfer's types are probably in Munich (personal communication A. Nadig & W. Sauter).
  - **Jöhl, Regina:** Specimens from Switzerland and Spain, donated to ETH in 2003.
  - **Sauter, Willi (\*1928):** Specimens from an excursion to Spain/Portugal and from student excursions to the Alps. Det. Sauter and Ingrisch. Also an alcohol collection with larvae.
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** Rather comprehensive world collection in 64 drawers, a few specimens from Switzerland. Some taxa revised by Nadig, Schmidt, Ingrisch.
  - **Smaller collections:** from Johann Peter Wolf, 1896-1974; many from Basel region, Davos region; Otto (Reuss valley); Gerloff (diploma thesis

Entomology ETH, Merishausen); Thomas Gloor (diploma thesis Entomology ETH, 1996, Canton Schaffhausen); Sybille Jungo (diploma thesis at University Zurich 1991, Reuss valley); Ingrisch (Mediterranean area, Alps, Germany); Senn and Walter (master thesis Senn Agroscope ART Reckenholz) with specimens from Bulgaria.

- **Undetermined:** 15 drawers

#### **PHASMOPTERA** [Gespenstschrecken, Stick Insects]

- **Size:** 28 drawers
- **Coverage:**
  - **Switzerland:** -
  - **Rest of the Palearctic:** Unknown
- **Types:** Some specimens
- **Included collections:**
  - **von Schulthess Rechberg-Schindler, Anton (1855-1941):** World collection in 27 drawers; some types from Brunner & Redtenbacher. The collection was revised by Zompro and Brock, and types checked by Brock.
  - **Undetermined:** 1 drawer

#### **PLECOPTERA** [Steinfliegen, Stoneflies]

- **Size:** 11 drawers +
- **Coverage:**
  - **Switzerland:** Intermediate
  - **Rest of the Palearctic:** Almost nothing
- **Types:** Specimens described by Ris; many have been revised by Peter Zwick (Schlitz, Germany).
- **Included Collections:**
  - **Ris, Friedrich (1867-1931):** 10 drawers and preparations: Most of the specimens from Switzerland, with particular emphasis on Rheinau (Zurich), Tösstal (Zurich), Katzenssee and Örlikon (Zurich), Upper Engadine (Julier, Silvaplana), Murgtal (canton St. Gallen) and other locations in eastern Switzerland. Few non-Swiss specimens (some from England, which were exchanged with Mr Morton).
  - **Alcohol collection:** 3 containers with specimens from Sauter, Ris and Baumann
  - **Extrapaleartic Plecoptera:** 1 drawer with few specimens from Sauter and Horak.
- **Comments:** Many specimens dry preserved. Some species are recorded in the CSCF database.

### **PSOCOPTERA** [Staubläuse, Booklice]

- **Size:** 2 glass containers and 1 preparation box
- **Coverage:**
  - **Switzerland:** -
  - **Rest of the Palearctic:** -
- **Types:** None
- **Included collections:**
  - **Hartmann, Felix:** 2 containers from the Swiss National Park collected 1951-1953.

### **RAPHIDIOPTERA** [Kamelhalsfliegen, Snakeflies]

- **Size:** 2 drawers
- **Coverage:**
  - **Switzerland:** Quite good
  - **Rest of the Palearctic:** Almost nothing
- **Types:** None
- **Included collections:**
  - **Florin, Janett:** mostly from eastern Switzerland, Wallis and Graubünden, det. Eglin and Florin. Donated to ETH in 1995.
  - **Ris, Friedrich (1867-1931):** mostly from the Engadine and Zurich (Katzensee), det. Ris,
  - **Sauter, Willi (\*1928):** Small sample from different regions of the Alps and from around Zurich (Illnau). Det. Sauter, Lerardi or Duelli
  - **Wolf, Johann Peter (1896-1974):** Smaller collection, probably det. Eglin, source: Alsace, lowlands of the Upper Rhine (Kaiserstuhl), Basel region, Davos region and Domleschg, Wallis, few specimens from Ticino.

### **SIPHONAPTERA** [Flöhe, Fleas]

- **Size:** 7 preparation boxes
- **Coverage:**
  - **Switzerland:** Quite good
  - **Rest of the Palearctic:** ?
- **Types:** None
- **Included collections:**
  - Includes fleas collected by Cäsar Claude (Curator of the Zoological Museum of the University of Zurich) from various small mammals. Also fleas collected by W. Büttiker (Magden) from mammals and birds. Set-up and determined by W. Sauter.

### **STREPSIPTERA** [Fächerflügler, Twisted-Wing Parasites]

- **Size:** 1 standard drawer and 1 preparation box
- **Coverage:**
  - **Switzerland:** -
  - **Rest of the Palearctic:** -
- **Types:** -
- **Included collections:** small collection

### **THYSANOPTERA** [Fransenflügler, Thrips]

- **Size:** 1 glass and preparation box
- **Coverage:**
  - **Switzerland:** -
  - **Rest of the Palearctic:** -
- **Types:** -
- **Included collections:** Very small

### **TRICHOPTERA** [Köcherfliegen, Caddisflies]

- **Size:** 53 standard drawers, 106 preparation boxes and 42 alcohol containers
- **Coverage:**
  - **Switzerland:** Good
  - **Rest of the Palearctic:** Almost nothing
- **Types:** Some species from Ris, revised by Fernaud Schmid.
- **Included collections:**
  - **Buholzer, Hubert (\*1948):** Collection of Rhyacophila larvae in 28 alcohol containers from ETH dissertation 6177. Locations of specimens can be deduced by using the old set of maps 1:50,000.
  - **Florin, Janett (1917-1996):** Larger collection, leg. Florin (Ruggell (FL), Flums, Walensee, Muolen, Wittenbach (all from canton St. Gallen), rarely leg. Malicky (small "M" on label, mostly from Lunz am See, Austria) or leg. Rezbanyai-Reser (specimens from Sempach, Vogelmoos bei Neudorf, Hochdorf, Hasle-Balmoos, all from canton Lucerne). See Florin (1991, 1992). In addition to the collection of dried specimens there are several thousand preparations of various specimens. Donated to ETH in 1995.
  - **Ris, Friedrich (1867-1931):** mostly from the Upper Engadine, Biberbrugg/Einsiedeln (canton Schwyz), Rheinau and Katzenssee (Canton Zurich). Nicely prepared specimens including some types (revised by F. Schmid). Some findings were published by Ris (1889). Data mostly recorded at CSCF.
  - **Sauter, Willi (\*1928):** (mainly Illnau/Zurich) and Johann Peter Wolf (1896-1974); Basel and Jura of Basel/Solothurn, e.g. Hofstetten), Kaiserstuhl (e.g. Neuenburg) and lowlands of the upper Rhine valley (Istein/Freiburg im Breisgau; Efringen); also Davos, Landwassertal (Wiesen, Brienz, Glaris, Tiefencastel, Schinschlucht), Domleschg (Rothenbrunnen), Wallis (Salgesch), Ticino. The exact locations are often abbreviated and have to be decoded with a detailed map (1/25,000).
  - **Old collection:** mostly built up by Ris when he was an assistant in the collection. Labels in Ris' handwriting but no second note (ex coll. F. Ris). Two drawers of larval cases.
  - **Undetermined:** 7 standard drawers

### **NON-INSECT ARTHROPODS** [Nicht-insektale Gliederfüsser]

- **Size:** 4 standard drawers, some alcohol material
- **Coverage:**
  - **Switzerland:** Poor coverage
  - **Rest of the Palearctic:** Poor
- **Types:** None

- **Included collections:**
  - **Sauter, Willi (\*1928):** Almost exclusively specimens from Sauter (from Illnau, Zurich), Nyffeler (dissertation and bycatches) and Bosshard (Greifesse swamps, analyzed in a post-diploma thesis at ETH; Andres, Bosshard Stromeyer and Wohlgemuth).
  - **Schmid, Franziska:** from Schmid's diploma thesis 2006 (Aesch Basel Landschaft, Wünnewil, Sugiez Canton Freiburg, Rafz, Büttenhardt, Ramsen, Löhningen and Rhein valley region of Canton St. Gallen). Some spiders determined by Anna Stäubli and recorded in the CSCF database.



## IMAGES

**Jäckh, Eberhard (1902-1993):** Photographs (b/w) of Microlepidoptera genital preparations. ETH purchased this valuable collection of images; the corresponding specimens went to the Smithsonian Institution Washington, duplicates went to Dipartimento Entomologia e Zoologia applicate all' Ambiente, Università di Torino.

**Krebs, Albert (\*1931):** Extensive slide collection (including some from Andreas Müller and others) depicting Swiss insects, host plants and habitat. The collection is now accessible on the E-Pics website at [http://biosys.e-pics.ethz.ch/#1451315862829\\_1](http://biosys.e-pics.ethz.ch/#1451315862829_1).

## LIBRARY

The ETH Entomological Collection has a fully catalogued library adjoining the collection room. It includes identification books, revisions, catalogs, regional faunistic studies and publications on theoretical topics (species concepts, classifications, code for zoological nomenclature). Many old and current journals on systematics and faunistics are included, and there is a special collection of rare and valuable books.

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