

Herbarium of the Pontifical Catholic University of Paraná (HUCP), Curitiba, Southern Brazil

Rodrigo A. Kersten ^{1,*}, João A. M. Salesbram ² and Luiz A. Acra ³

¹ Pontifical Catholic University of Paraná, School of Life Sciences, Curitiba 80.215-901, Brazil

² REFLORA Project, Curitiba, Brazil; joaosalesbram@hotmail.com

³ Pontifical Catholic University of Paraná, School of Life Sciences, Curitiba 80.215-901, Brazil; luiz.acra@pucpr.br

* Correspondence: r.kersten@pucpr.br; Tel.: +55-41-3721-2392

Academic Editor: Martin M. Gossner

Received: 22 November 2016; Accepted: 5 February 2017; Published: 10 February 2017

Abstract: The main objective of this paper is to present the herbarium of the Pontifical Catholic University of Paraná's and its collection. The history of the HUCP had its beginning in the middle of the 1970s with the foundation of the Biology Museum that gathered both botanical and zoological specimens. In April 1979 collections were separated and the HUCP was founded with preserved specimens of algae (green, red, and brown), fungi, and embryophytes. As of October 2016, the collection encompasses nearly 25,000 specimens from 4934 species, 1609 genera, and 297 families. Most of the specimens comes from the state of Paraná but there were also specimens from many Brazilian states and other countries, mainly from South America (Chile, Argentina, Uruguay, Paraguay, and Colombia) but also from other parts of the world (Cuba, USA, Spain, Germany, China, and Australia). Our collection includes 42 fungi, 258 gymnosperms, 299 bryophytes, 2809 pteridophytes, 3158 algae, 17,832 angiosperms, and only one type of *Mimosa* (*Mimosa tucumensis* Barneby ex Ribas, M. Morales & Santos-Silva—Fabaceae). We also have botanical education and education for sustainability programs for basic and high school students and training for teachers.

Dataset: https://ferramentas.sibbr.gov.br/parceiros_jbrj/resource?r=hucp_5

Dataset license: CC-BY-NC 4.0

Keywords: catalogue; scientific collection; Pontifical Catholic University of Paraná; Southern Brazil; Araucaria forest; tropical Atlantic rain forest; Paraná flora

1. Introduction

The Pontifical Catholic University of Paraná (PUCPR) is a non-profit university situated in Southern Brazil, in the city of Curitiba, that offers 66 undergraduate courses. The learning community comprises more than 30,000 students spread through five campuses: Curitiba, São José dos Pinhais, Londrina, Maringá, and Toledo. The Curitiba campus was founded in 1959 and, nowadays, houses eight academic units. The School of Life Sciences is composed of 12 undergraduate degrees offered at Curitiba [1].

Established in 1952 as “Natural History” in the Faculty of Philosophy, Sciences and Letters of Curitiba, the Biology course, renamed only on 1964, is one of the oldest from PUCPR. In the past decade several important biologists, such as Rudolf Bruno Lange (1922–2016), Ralph João George Hertel (1923–1985—see Kersten and Acra [2]) and Armando Carlos Cervi (1944–2014), graduated from here.

By the early 1970s the biology course was growing fast with respect to both students and research. In 1973 two professors—Rudolf Bruno Lange and Estefano Francisco Jablonski (1948–2016)—decided to create a biology museum. This institution brought together the zoological and botanical collection along with anthropological, geological, and fossil records. Quite important, with respect to this early history, was the support received from some institutions, remarkably the Hatschbach Herbarium, National Forestry Service Herbarium, and the Institute of Biology and Technological Herbarium, which donated specimens that came to be the first botanical records.

The botanical collection started to grow fast and on April 1979, the botanist and professor João Carlos Jaszczerski founded the *Herbário da Universidade Católica do Paraná*—HUCP—with plants, algae, and fungi species previously stored in the museum. Only on the year of 1995, however, it was included on the Index Herbariorum [3]. Nowadays it also is also registered at the Global Registry of Scientific Collections [4] and at TAXonline [5].

2. General Description

The aim of the herbarium is to study the plant diversity of the local vegetation, especially the regions between the coastal line of the state and the *Ponta Grossa* plateau, including *Restinga*, *Mangue*, Atlantic Rain Forest, *Araucaria* Forest, and the grasslands ecosystems. The collection was initially established for didactic purposes only, but as the research projects grew in number, the collection also increased its amount of material.

3. Data Resources

The data supporting these analyses are deposited in the GBIF/SiBBr and can be downloaded at https://ferramentas.sibbr.gov.br/parceiros_jbrj/resource?r=hucp_5.

4. Plant Processing Procedures

Plants were collected according to usual methods, as defined by Rotta et al. [6] and the Queensland Herbarium manual [7], pressed in plant press and dried on lamp heaters (45 °C) after which they were incorporated into the database. All data, such as scientific name, location, city, coordinates, altitude, and general descriptions of the plant were recorded. The software automatically generates registration numbers. In the collection, plants are stored in wood cabinets separately in groups: algae, fungi, bryophytes, pteridophytes (ferns and lycophytes), gymnosperms, monocots and dicots *sensu* Cronquist (1981). Inside the groups, species are alphabetically organized according to family and gender. The entire database was reviewed by the DataClean [8] tool from CRIA [9], which checks the coordinates, toponymy, scientific names, and their authors. The curators review the “doubtful” records. The names were checked using the Brazilian Flora 2020 list [10]; the identifications were made by specialists visiting the herbarium or by comparison with photos or duplicates sent to other institutions. Nevertheless, names were updated on database only after doing it on exsiccates. The HUCP herbarium uses Brahms software version 7.8 [11].

5. Plant Collecting

Most specimens came from research activities of professors and students from the biology undergraduate course, from exchange programs and from donations. The research activities include scientific initiation programs (PIBIC/PIBIT), research projects, and the term paper/final course assignment mandatory for graduating students. Accessory, other courses, like forestry, agronomy, and pharmacy, also contribute with research material. An important part of our specimens comes from sporadic collecting and from some collecting expeditions, most of which occurred in the state of Paraná.

6. Geographic Coverage

Plants were collected mainly on Paraná State, Southern Brazil. Inside Paraná, plants were collected mainly on the west side of the state.

Coordinates: 27°50' and 22°30' Latitude; 48°13' W and 54°37' Longitude.

7. Available Data

The herbarium has 24,429 specimens. Access to database is available via the SpeciesLink INCT Virtual Herbarium [12] and “*Jardim Botânico do Rio de Janeiro*”—JABOT [13]. Even though we still have no images available on-line, we are beginning the digitalization process that should be conclude at the middle of 2017.

The data stored and published through GBIF on Darwin Core [14] format can be used in a wide range of research projects addressing key biodiversity scientific questions including: invasive alien species, climate change, and conservation, among others [15]. Taxa included:

Rank	Scientific Name	Common Name
kingdom	Fungi	Fungi
kingdom	Stramenopiles	Brown Algae
kingdom	Archaeplastida	
phylum	Chloroplastida	Green plants
class	Chlorophyceae	Green algae
class	Charophyceae	Charophytes
class	Embriopsida	Land plants

8. Collection Data

Collection name: Herbário da Pontifícia Universidade Católica do Paraná

Collection identifier: HUCP

Specimen preservation method: Dried plants

9. Usage Rights

Use license: Creative Commons Attribution Non Commercial (CC-BY-NC) 4.0.

IP rights notes: HUCP data are free for non-commercial use. Users must give appropriate credits, provide a link to the collection at SiBBR, indicate any changes, cite the original data paper, inform on the use and send a copy of publications to the curator. Researchers and institutions are responsible for adequate use of the data. The HUCP herbaria did no guarantee correct identification of specimens or associated data.

10. Data Resources

Data package title: Herbário da Pontifícia Universidade Católica do Paraná—HUCP

Resource link: https://ferramentas.sibbr.gov.br/parceiros_jbrj/resource?r=hucp_5#gbif

Alternative identifiers: https://ferramentas.sibbr.gov.br/parceiros_jbrj/resource?r=hucp_5

Number of data sets: one

Data set name: Darwin Core Archive Herbário da Pontifícia Universidade Católica do Paraná—HUCP

Character set: UTF-8

Download URL: https://ferramentas.sibbr.gov.br/parceiros_jbrj/archive.do?r=hucp_5&v=1.0

Data format: Darwin Core Archive format (DwC)

Data format version: 1.0

Column Label	Column Description
id	Registry number
modified	Collecting date
institutioncode	Institution code
basisOfRecord	Basis Of Record
dynamicProperties	Barcode
occurrenceID	ID number
catalogNumber	Catalogue Number
occurrenceRemarks	Observations
recordNumber	Collector number
recordedBy	Collector
eventDate	Collecting date
year	Collecting year
month	Collecting month
day	Collecting day
fieldNotes	Characteristics
continent	Continent
country	Country
stateProvince	State or Province
county	County
locality	Locality
minimumElevationInMeters	Altitude
maximumElevationInMeters	Altitude
decimalLatitude	Latitude
decimalLongitude	Longitude
coordinateUncertaintyInMeters	Coordinate Uncertainty In Meters
identifiedBy	Identified By
dateIdentified	Identifying date
identificationQualifier	Identification Qualifier
typeStatus	Type Status
scientificName	Scientific Name
kingdom	Kingdom
phylum	Phylum
order	Order
family	Family
genus	Genus
specificEpithet	Specific Epithet
infraspecificEpithet	Infraspecific Epithet
scientificNameAuthorship	Author of plant name
vernacularName	vernacular Name

11. Additional Information

In January 2017, HUCP collection encompassed 24,430 specimens from 4758 species (approximately one specie for every five records), 1580 genera, and 297 families; 2063 not identified at the species level. Data includes 42 specimens of fungi (23 species), 3158 algae (185 species), 299 bryophytes (97 species), 284 lycophytes (39 species), 2525 ferns (465 species), 258 gymnosperms (48 species), 51 basal angiosperms (ANA group, four species), 846 magnoliids (165 species), 3013 monocots (895 species), and 13,922 eudicots (2837 species), and only one type (*Mimosa tucumensis* Barneby ex Ribas, M. Morales & Santos-Silva—Fabaceae). (Figures 1–4).

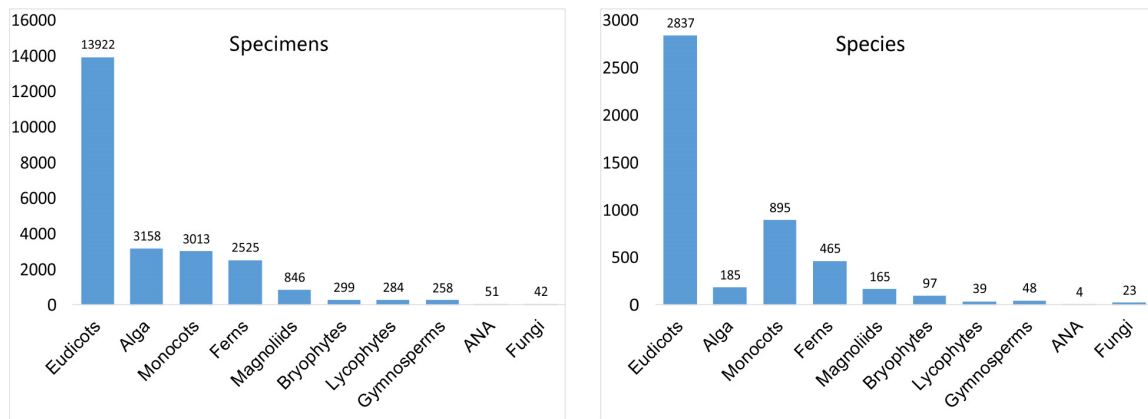


Figure 1. Number of specimens (left) and species (right) registered at HUCP by main botanical groups.

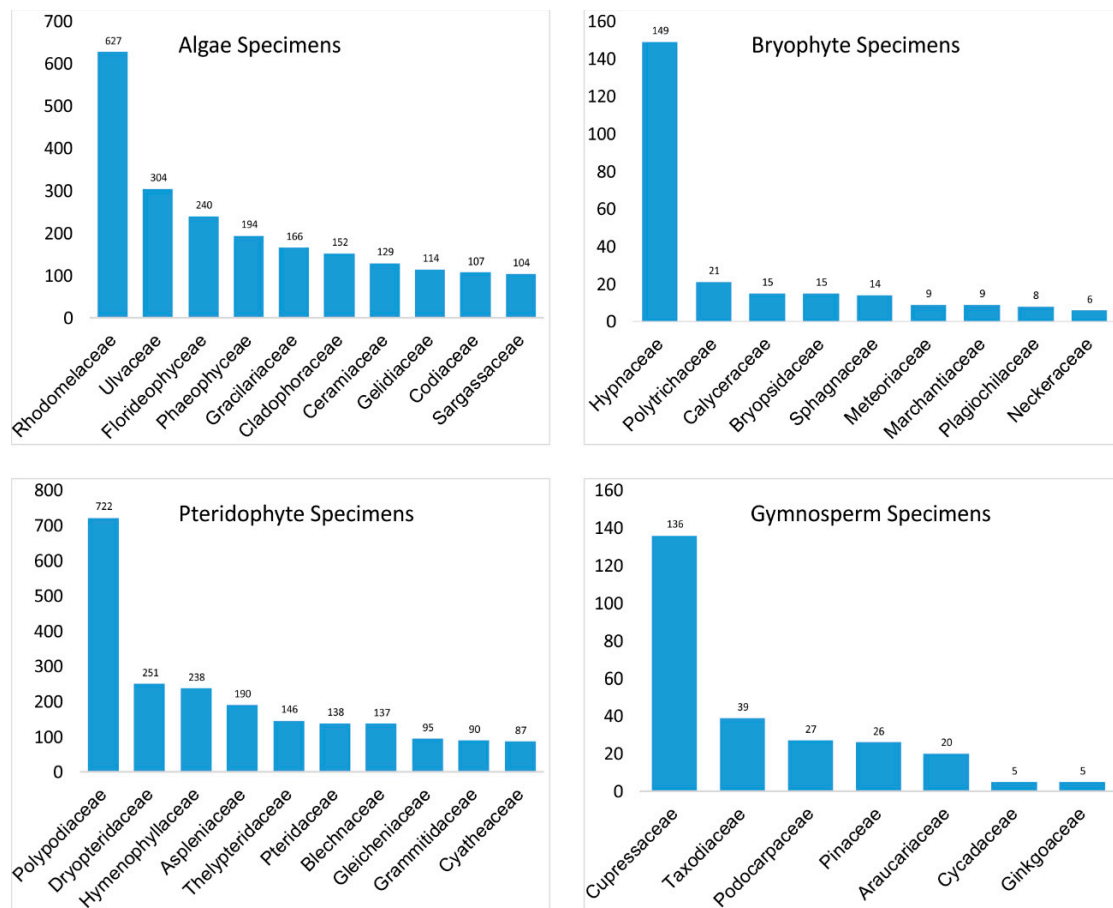


Figure 2. Number of specimens registered at HUCP of the main families of algae, bryophytes, pteridophytes (ferns and lycophytes), and gymnosperms.

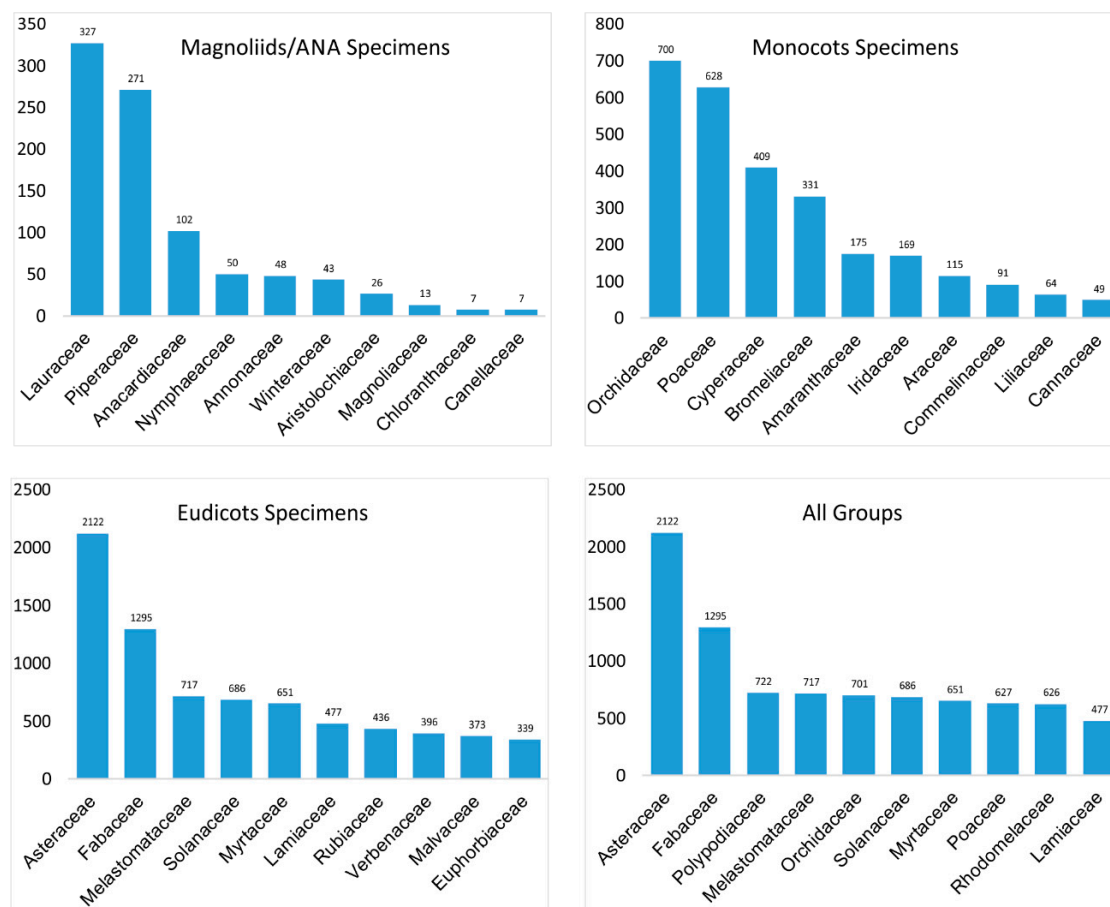


Figure 3. Number of specimens registered at HUCP of the main families of magnoliids, monocots, and eudicots, and of all groups together.

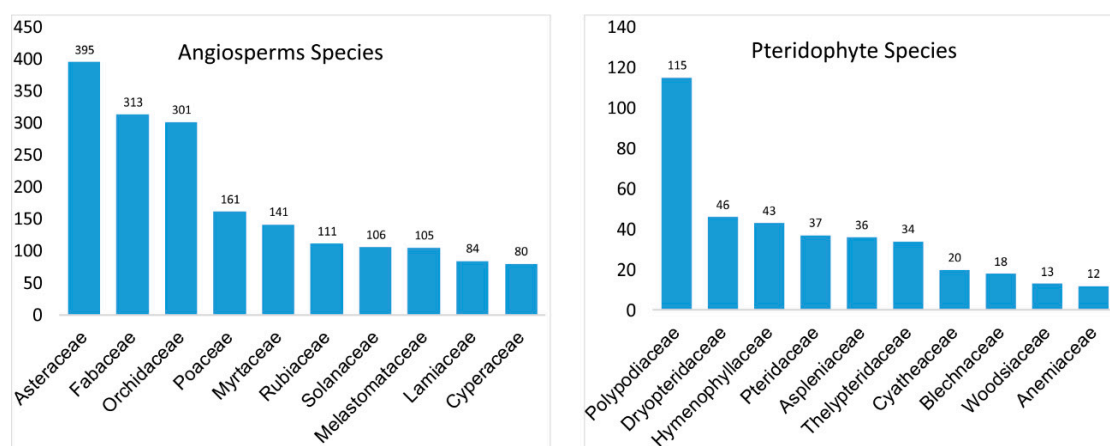


Figure 4. Number of species present on main angiosperm and pteridophyte families registered at HUCP.

The first numbers of our collection are a *Coix lacryma-jobi* L. (Poaceae) (HUCP 00001) and a *Remirea maritima* Aubl. (Cyperaceae) (HUCP 00002), both collected by the eminent botanist Carlos Stellfeld [16,17], director of the “Museu Paranaense”. The oldest voucher specimens of the museum are *Eupatorium itatiayense* Hieron; *Chusquea bambusoides* (Raddi) Hackel and *Helicteres ovata* Lam dated from 1943. Some old plants, like a *Sticherus bifidus* (Willd.) Ching, were collected by Reinhardt Maack, the renowned geologist, in 1946 during his expeditions through the state [18]. The temporal

distribution of collected specimens can be seen in Figure 5. The main collectors were Madalena Shirata (2553 specimens), Marlon Selusniaki (1442 specimens) and Rodrigo Kersten (543 specimens).

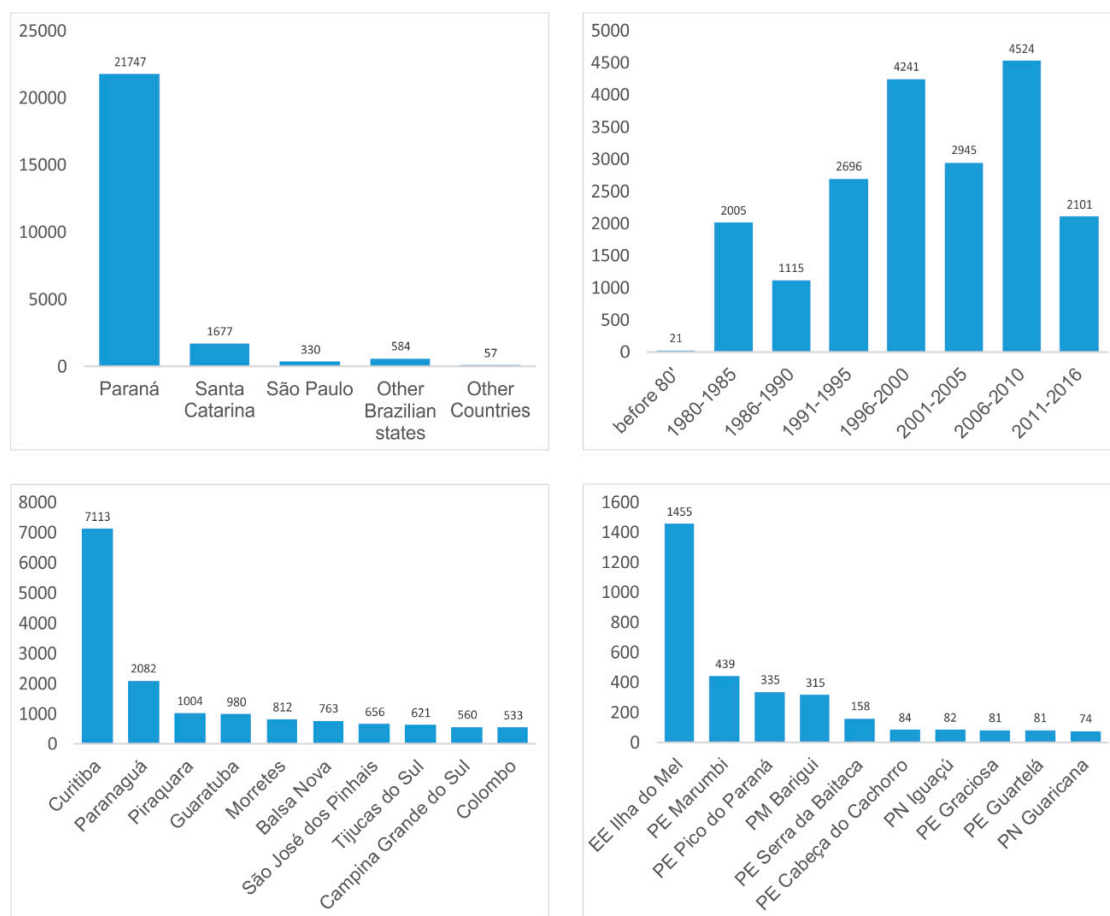


Figure 5. Some characteristics of HUCP's collection: (**upper left**) temporal distribution of specimens by collection year; (**upper right**) distribution of specimens registered at HUCP in Brazilian states and other countries; (**bottom left**) distribution of specimens registered at HUCP in Paraná municipalities; and (**bottom right**) distribution of specimens registered at HUCP in conservation units on Paraná State.

Most of our collection comes from our state (Paraná—89%) and from Santa Catarina (7%). On Paraná, 250 (63%) municipalities are represented. Curitiba (33%), Paranaguá (10%), Piraquara (5%) e Guaratuba (5%) are the best represented localities (Figures 5–7). This geographic bias is due mainly to collector's characteristics, mostly undergraduate biology students whose research projects are always nearby. Another good reason is the low exchange with other collections. In the past years it was almost suspended, as we have no permanent employee to sort out plants that should be sent or to organize received exsiccates.

At least 3818 specimens (15.5%) were collected inside 72 conservation units (APA were not considered) mainly from state parks (PE), national parks (PN) and municipal parks (PM). Other important types of conservation units were "Estação Ecológica" (EE), national forests (FN), biologic reserve (RB), and particular reserves (RPPN). The best represented conservation units can be seen in Figure 5.

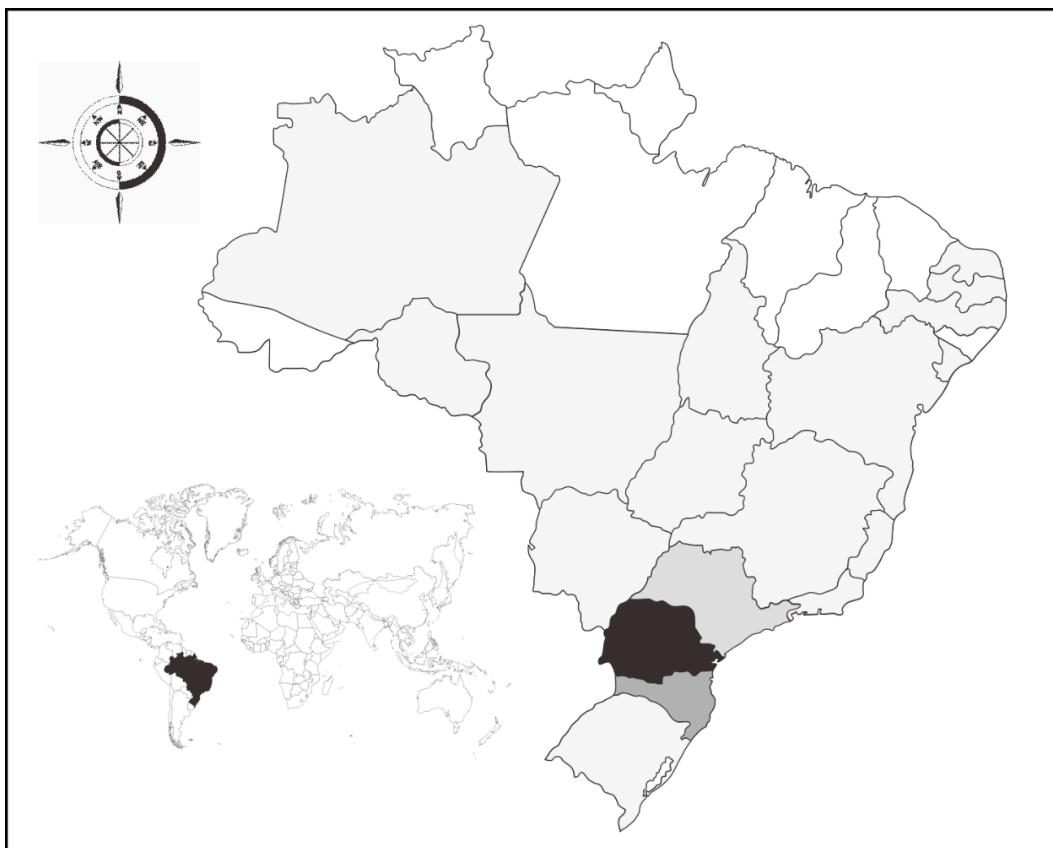


Figure 6. Distribution of specimens registered at HUCP on Brazilian states, darker shades of grey indicate more specimens.

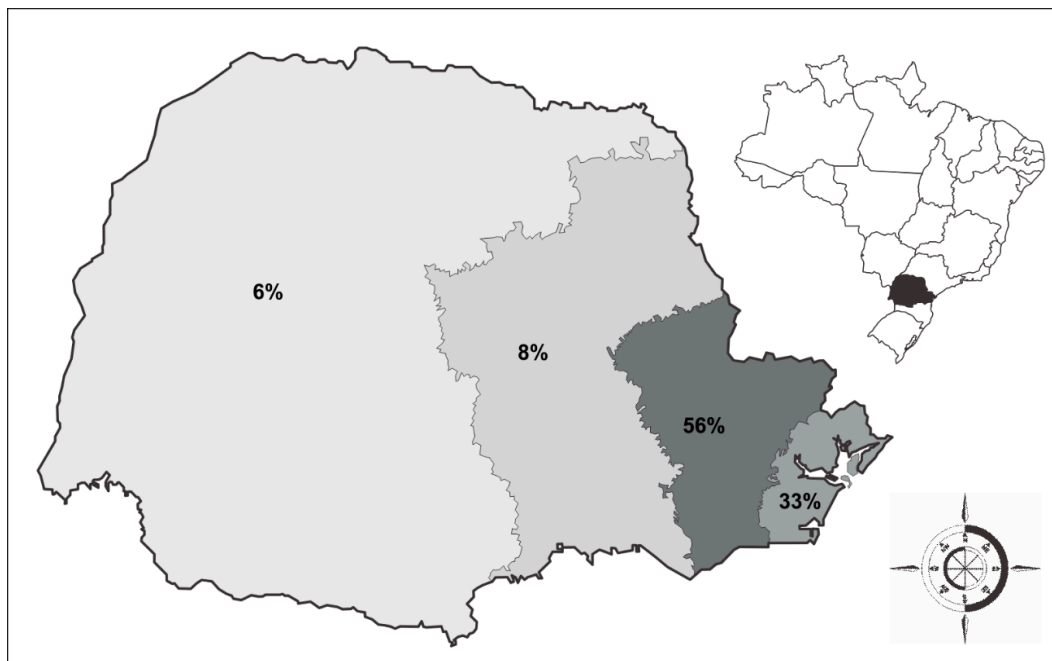


Figure 7. Distribution of specimens registered at HUCP on Paraná state physiographic regions; darker shades of grey indicate more specimens.

12. Taxonomic Ranks

The classification of algae, fungi and higher taxa are according to Adl, et al. [19], Angiosperm follow the classification proposed by APG-IV [20], and Pteridophyte follow PPG I [21].

- Fungi (42/14)

- Opisthokonta

Polyporaceae (1/1), Cladoniaceae (1/1), Parmeliaceae (21/9), Usneaceae (1/1), Xylariaceae (1/1)

- Algae (204/80)

- Stramenopiles

Phaeophyceae (brown algae)

- Archaeplastida

Rhodophyceae (red algae), Chloroplastida (Chlorobionta), Chlorophyceae (green algae), Charophyceae (Charophytes)

Acrochaetiaceae (1/1), Bangiaceae (2/1), Bryopsidaceae (2/1), Caulacanthaceae (1/1), Caulerpacae (3/1), Ceramiaceae (3/2), Champiaceae (2/1), Charophyceae (4/2), Chnoosporaceae (4/1), Chordariaceae (1/1), Cladophoraceae (9/2), Codiaceae (6/1), Compsopogonaceae (3/1), Corallinaceae (6/2), Cryptonemiaceae (1/1), Dasyaceae (5/1), Dasycladaceae (1/1), Delesseriaceae (3/2), Dictyotaceae (5/4), Ectocarpaceae (2/2), Florideophyceae (23/11), Galaxauraceae (3/1), Gelidiaceae (8/3), Gigartiniaceae (2/1), Gracilariaceae (8/2), Halymeniaceae (5/2), Laminariaceae (1/1), Phaeophyceae (14/6), Plocamiaceae (1/1), Rhodomelaceae (31/7), Rhodymeniaceae (2/2), Sargassaceae (10/1), Scitosiphonaceae (2/1), Siphonocladaceae (1/1), Siphonaceae (2/1), Solieriaceae (2/2), Udoteaceae (2/2), Ulvaceae (12/3), Ulvophyceae (7/3), Zygnemataceae (1/1).

- Land Plants

- Archaeplastida

Phylum: Chloroplastida (Chlorobionta)

Class: Embriopsida (land Plants)

Subclass: Marchantiidae (liverwort), Bryidae (moss), Anthocerotidae (hornwort), Lycopodiidae (lycophytes), Equisetidae, Marattiidae, Ophioglossidae, Polypodiidae, Psilotidae (ferns), Ginkgoideae, Cycadidae, Pinidae, (gymnosperms), and Magnoliidae (angiosperms).

- Bryophytes (98/64)

Marchantiidae (27/18) Aneuraceae (2/2), Calypogeiaceae (1/1), Frullaniaceae (2/1), Jungermanniaceae (1/1), Lejeuneaceae (3/3), Lepidoziaceae (1/1), Lophocoleaceae (1/1), Marchantiaceae (5/2), Metzgeriaceae (2/1), Pallaviciniaceae (4/2), Plagiochilaceae (2/1), Porellaceae (1/1), Radulaceae (2/1).

Bryidae (66/44) Bartramiaceae (2/2), Bryaceae (2/2), Calymperaceae (1/1), Dicranaceae (6/4), Fissidentaceae (3/1), Hedwigiaceae (1/1), Hookeriaceae (2/2), Hypnaceae (5/2), Hypopterygiaceae (3/1), Leucodontaceae (1/1), Meteoriaceae (7/5), Mniaceae (1/1), Neckeraceae (4/3), Orthotrichaceae (3/3), Phyllogoniaceae (1/1), Polytrichaceae (5/3), Pottiaceae (2/2), Prionodontaceae (1/1), Pterobryaceae (1/1), Racopilaceae (1/1), Rhizogoniaceae (4/3), Sematophyllaceae (3/2), Sphagnaceae (7/1).

Anthocerotidae (5/2), Anthocerotaceae (5/2).

- Pteridophytes (507/105)

Lycopodiopsida (23/5) Isoetaceae (1/1), Lycopodiaceae (22/4), Selaginellaceae (17/1).

Polypodiopsida (484/100) Anemiaceae (12/1), Aspleniaceae (36/3), Athyriaceae (1/1), Blechnaceae (18/2), Ceratopteridaceae (1/1), Cyatheaceae (20/3), Davalliaceae (12/3), Dennstaedtiaceae (10/6), Dicksoniaceae (3/2), Dryopteridaceae (47/16), Equisetaceae (4/1), Gleicheniaceae (14/3), Grammitidaceae (9/4), Hymenophyllaceae (43/6), Lindsaeaceae (8/1), Lygodiaceae (1/1), Marattiaceae (5/2), Marsileaceae (3/1), Ophioglossaceae (5/2), Osmundaceae (5/3), Plagiogyriaceae (1/1), Polypodiaceae (125/17), Psilotaceae (1/1), Pteridaceae (35/12), Saccolomataceae (1/1), Salviniaceae (4/2), Schizaeaceae (4/2), Tectariaceae (2/1), Thelypteridaceae (34/2), Vittariaceae (6/1), Woodsiaceae (14/2).

○ Gymnosperms (50/20)

Cycadidae (2/1) Cycadaceae (2/1).

Ginkgoideae (1/1) Ginkgoaceae (1/1).

Pinidae (47/18) Araucariaceae (6/2), Cupressaceae (24/7), Pinaceae (9/4), Podocarpaceae (3/1), Taxodiaceae (5/4).

○ Angiosperms (4033/1320)

ANA (5/3) Cabombaceae (1/1), Nymphaeaceae (4/2)

Magnoliids (171/40) Anacardiaceae (15/6), Annonaceae (22/8), Aristolochiaceae (15/2), Chloranthaceae (2/2), Hernandiaceae (1/1), Lauraceae (61/12), Magnoliaceae (7/4), Myristicaceae (1/1), Piperaceae (47/4).

Monocots (919/296) Agavaceae (5/2), Alismataceae (8/2), Alstroemeriaceae (5/2), Amaranthaceae (50/13), Amaryllidaceae (13/7), Araceae (37/15), Arecaceae (13/9), Asparagaceae (9/5), Astroemeraceae (1/1), Bromeliaceae (83/16), Burmanniaceae (1/1), Cannaceae (6/1), Commelinaceae (28/9), Cyclanthaceae (1/1), Cymodoceaceae (1/1), Cyperaceae (84/18), Heliconiaceae (7/2), Hypoxidaceae (2/1), Iridaceae (34/15), Juncaceae (6/1), Juncaginaceae (4/4), Liliaceae (20/11), Musaceae (2/1), Orchidaceae (313/91), Pandanaceae (1/1), Poaceae (162/64), Restionaceae (2/2), Ruppiaceae (1/1), Ruscaceae (1/1), Smilacaceae (5/1), Strelitziaceae (2/1), Typhaceae (4/1), Velloziaceae (3/1), Xanthorrhoeaceae (1/1), Xyridaceae (6/2), Zingiberaceae (10/4).

Eudicots (2941/985) Acanthaceae (52/22), Aceraceae (6/1), Achariaceae (1/1), Adoxaceae (4/1), Aizoaceae (4/3), Apiaceae (41/18), Apocynaceae (57/26), Aquifoliaceae (13/1), Araliaceae (14/5), Asclepiadaceae (14/9), Asteraceae (414/127), Balsaminaceae (4/1), Basellaceae (2/2), Begoniaceae (22/1), Berberidaceae (2/2), Betulaceae (1/1), Bignoniaceae (52/25), Bixaceae (1/1), Boraginaceae (29/10), Brassicaceae (28/14), Burseraceae (5/1), Buxaceae (1/1), Cactaceae (38/11), Calceolariaceae (2/1), Calyceraceae (1/1), Campanulaceae (10/5), Canellaceae (2/2), Cannabaceae (7/3), Capparaceae (7/3), Caprifoliaceae (12/6), Cardiopteridaceae (2/1), Caricaceae (2/2), Caryocaraceae (1/1), Caryophyllaceae (13/8), Casuarinaceae (3/1), Celastraceae (14/4), Chenopodiaceae (1/1), Chrysobalanaceae (1/1), Clethraceae (4/1), Clusiaceae (11/6), Combretaceae (8/4), Convolvulaceae (35/9), Crassulaceae (7/3), Cucurbitaceae (19/13), Cunoniaceae (7/2), Dilleniaceae (5/4), Dioscoreaceae (2/1), Droseraceae (7/1), Ebenaceae (5/1), Elaeagnaceae (1/1), Elaeocarpaceae (4/1), Ericaceae (17/6), Eriocaulaceae (12/5), Erythroxylaceae (14/1), Escalloniaceae (3/1), Euphorbiaceae (92/33), Fabaceae (318/102), Fagaceae (13/4), Flacourtiaceae (14/2), Gentianaceae (4/3), Geraniaceae (7/3), Gesneriaceae (24/8), Goupiaceae (1/1), Griselinaceae (1/1), Grossulariaceae (5/2), Haloragaceae (8/3), Hamamelidaceae (3/2), Humiriaceae (3/2), Hydrangeaceae (1/1), Hydrocharitaceae (5/4), Hydroleaceae (1/1), Hypericaceae (9/2), Icacinaceae (2/1), Juglandaceae (3/2), Krameriaceae (1/1), Lamiaceae (88/32), Lecythidaceae (1/1), Lentibulariaceae (4/2), Linaceae (1/1), Loasaceae (1/1), Loganiaceae (5/4), Loranthaceae (7/4), Lythraceae (18/7), Malpighiaceae (27/17), Malvaceae (70/29), Marantaceae (5/2), Marcgraviaceae (4/2), Martyniaceae (1/1), Mayacaceae (3/1), Melastomataceae (112/19), Meliaceae (17/5), Menispermaceae (6/4), Menyanthaceae (2/1), Monimiaceae (10/3), Moraceae (29/10), Myrsinaceae (1/1), Myrtaceae (147/30), Nyctaginaceae

(9/5), Ochnaceae (10/3), Olacaceae (1/1), Oleaceae (18/8), Onagraceae (21/5), Orobanchaceae (9/6), Oxalidaceae (20/2), Papaveraceae (6/4), Passifloraceae (21/1), Pentaphragmaceae (1/1), Peraceae (1/1), Phyllanthaceae (1/1), Phytolaccaceae (12/4), Picramniaceae (3/1), Pittosporaceae (4/1), Plantaginaceae (18/8), Platanaceae (2/1), Plumbaginaceae (4/2), Polemoniaceae (2/2), Polygalaceae (28/6), Polygonaceae (34/12), Pontederiaceae (6/3), Portulacaceae (4/2), Potamogetonaceae (4/1), Primulaceae (30/9), Proteaceae (11/3), Ranunculaceae (7/5), Rhabdodendraceae (1/1), Rhamnaceae (11/9), Rhizophoraceae (1/1), Rosaceae (48/19), Rubiaceae (118/40), Rutaceae (24/11), Salicaceae (10/5), Santalaceae (6/2), Sapindaceae (41/14), Sapotaceae (15/5), Sarraceniaceae (1/1), Saxifragaceae (2/2), Scrophulariaceae (16/10), Simaroubaceae (2/2), Solanaceae (111/17), Sterculiaceae (5/2), Styracaceae (5/2), Symplocaceae (17/1), Theaceae (8/5), Thymelaeaceae (3/1), Tiliaceae (4/3), Trigonaceae (3/1), Tropaeolaceae (3/1), Turneraceae (4/2), Urticaceae (21/7), Verbenaceae (58/13), Violaceae (11/4), Vitaceae (9/2), Vochysiaceae (11/4), Winteraceae (2/1), Zygophyllaceae (1/1).

13. Conclusions

The current greatest challenge in our herbaria is to digitize every single record in our collection in order to join the REFLORA Virtual Herbarium [22] part of the Brazilian Flora 2020 project [10], and the Brazilian Virtual Herbarium of Plants and Fungi—INCT [23]. We also plan to restructure the physical space in order to expand the collection and organize it according to APG [20] and PPG [21]. Another challenge is to increase the exsiccate exchange with other herbaria aiming to acquire all species occurring in our city (Curitiba Flora Project) and at Parana's first plateau and coastal shore.

Acknowledgments: We would like to extend thanks to all of the REFLORA, SiBBR and JABOT (Rio de Janeiro Botanical Garden) staff, especially to Rafaela Forzza who made it all possible.

Author Contributions: Kersten, R. and Acra, L. were curator of the Herbarium and responsible for the data and the maintenance of the collection. Kersten, R. was the author responsible for preparing and writing the article, while Acra, L. contributed with text revision. Salesbram, J. was the biologist responsible for the digitalization of the collection.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Hoerner, V., Jr. *História dos 50 anos da Pontifícia Universidade Católica do Paraná: 1959–2009*; Editora Champagnat: Curitiba, Brazil, 2009.
2. Kersten, R.A.; Acra, L.A. Ralph João George Hertel. *Estud. Biol. Ambient. Divers.* **2012**, *34*, 269–279. [CrossRef]
3. New York Botanical Garden. Index herbariorum. Available online: http://sweetgum.nybg.org/science/ih/herbarium_list.php?col_NamOrganisationAcronym=hucp (accessed on 1 February 2017).
4. GRBio. The global registry of biodiversity repositories. Available online: <http://grbio.org/institutional-collection/herbario-da-universidade-catolica-do-parana> (accessed on 1 February 2017).
5. TAXonLine. Rede paranaense de coleções biológicas. Available online: <http://taxonline.bio.br/index.php> (accessed on 1 February 2017).
6. Rotta, E.; Beltrami, L.C.d.C.e.; Zonta, M. *Manual de Prática de Coleta e Herborização de Material Botânico*; Embrapa Florestas: Colombo, Brazil, 2008.
7. Queensland Herbarium. *Collection and Preserving Plant Specimens, A Manual*, 2nd ed.; Department of Science, Information Technology and Innovation: Brisbane, Australia, 2016; p. 22.
8. The Reference Center on Environmental Information. Datacleaning. Available online: <http://splink.cria.org.br/dc/index?&system=&colecacao=HUCP> (accessed on 1 February 2017).
9. The Reference Center on Environmental Information. Centro de referência em informação ambiental. Available online: <http://www.cria.org.br/> (accessed on 1 February 2017).
10. Flora do Brasil 2020. Flora do Brasil 2020 em Construção. Available online: <http://floradobrasil.jbrj.gov.br/> (accessed on 1 February 2017).
11. University of Oxford. Brahms database. Available online: <http://herbaria.plants.ox.ac.uk/> (accessed on 1 February 2017).

12. INCT. Inct virtual herbarium - hucp. Available online: <http://www.splink.org.br/search?collectioncode=HUCP> (accessed on 1 February 2017).
13. Jardim Botânico do Rio de Janeiro. Jabot - hucp. Available online: <http://hucp.jbrj.gov.br> (accessed on 1 February 2017).
14. Biodiversity Information Standards. Darwin core. Available online: <http://rs.tdwg.org/dwc/> (accessed on 1 February 2017).
15. Global Biodiversity Information Facility (GBIF). Available online: <http://www.gbif.org/> (accessed on 1 February 2017).
16. Martius, C.F.P.; Niemeyer, E.; Stellfeld, C. A fisionomia do reino vegetal no brasil. *Arquivos do Museu Paranaense* **1943**, 3, 239–271.
17. Stellfeld, C. Fitogeografia geral do estado do paran . *Arquivo do Museu Paranaense* **1949**, 7, 309–350.
18. Maack, R. *Geografia F sica do Estado do Paran *; Banco do Desenvolvimento do Paran : Curitiba, Brazil, 1968; p. 350.
19. Adl, S.M.; Simpson, A.G.B.; Lane, C.E.; Luke , J.; Bass, D.; Bowser, S.S.; Brown, M.W.; Burki, F.; Dunthorn, M.; Hampl, V.; et al. The revised classification of eukaryotes. *J. Eukaryot. Microbiol.* **2012**, 59, 429–514. [[CrossRef](#)] [[PubMed](#)]
20. The Angiosperm Phylogeny Group. An update of the angiosperm phylogeny group classification for the orders and families of flowering plants: APG IV. *Bot. J. Linn. Soc.* **2016**, 181, 1–20.
21. The Pteridophyte Phylogeny Group. A community-derived classification for extant lycophytes and ferns. *J. Syst. Evol.* **2016**, 54, 563–603.
22. Re flora. Plantas do Brasil: Resgate Hist rico e Herb rio Virtual Para o Conhecimento e Conserva  o da Flora Brasileira. Available online: <http://floradobrasil.jbrj.gov.br/reflora/herbarioVirtual/> (accessed on 1 February 2017).
23. Institute of Nuclear Chemistry and Technology (INCT). Herb rio Virtual da Flora e dos Fungos. Available online: <http://inct.florabrasil.net/> (accessed on 1 February 2017).



  2017 by the authors; licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).