



IQBIO

Institut québécois
de la biodiversité

Report 2018-2019

Register of Quebec Natural Sciences Research Collections

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The Register of Québec natural science research collections

Keeping a collections register is essential for understanding Québec's biodiversity. Natural science collections are part of Quebec's heritage. They are privileged witnesses of current or past ecosystems. The IQBIO wants to identify and document the scientific, taxonomic and ecological characteristics of the collections and also the institutions or individuals who keep them.

Since 2003, the IQBIO has kept a register of Quebec natural sciences collections. From 2015, considerable work has been done to update this register and make it more accessible. This was made possible mainly through funding from donations from foundations.

Updating the Registry

In 2018 and 2019, the information collected on each of the listed collections were computerized in a relational database in ACCESS. The questionnaires used to document the collections were sent to several officials who had not yet completed them. At the same time, research enabled us to identify 21 new collections. In 2019, the register contained 290 collections in natural sciences (Table 1) with more than 8 million specimens (or samples). Three-quarters of these collections are considered active (autonomous collections not lost or not integrated into others). Of these, 160 are documented. The tables showing the distribution of the collections by type, location and status as well as the progress of their cataloguing are presented in Appendix 1.

During the past year, several aspects of the database have been reworked. First of all, the links between the different tables have been restructured in order to avoid incompatibilities between them. Then, forms were sent to several owners of collections in order to specify certain information about them. There is still a lot of information that was not found, in particular due to the non-return of the form.

Table 1. Statistics on the collections recorded in the register of Quebec natural science research collections.

Institut québécois de la biodiversité - Register 2019		
290 recorded collections		Percentage
Lost-discarded-missing collections	3	1%
Left-integrated-given collections	69	24%
Actives collections	218	75%
218 actives collections		Percentage
Completed questionnaires	169	73%
Incomplete questionnaires	48	22%
Not reachable	10	5%

Visits and Collector of the month

In 2018 and 2019, seven visits were made for collection validation (six visits in connection with the “Collector of the month” and one only for validation purposes). For the latter, it was the entomological collection of Pierre Drapeau, professor at University du Québec à Montréal (UQAM.)

Six “Collector of the month” articles were presented on the IQBIO website (<https://iqbio.gc.ca/collections/le-collectionneur-du-mois/>) and on its Facebook page. These articles concerned : Marie-Hélène Bélanger Morissette and Marie-Laure Escudero (biting insects), Jean-Pierre Bourassa (entomological and zoological collections of the Université du Québec à Trois-Rivières), Dolores Planas (research collection ' freshwater phytoplanktonic organisms at UQAM), Ariane Burke (osteological collection in the anthropology department of the University of Montreal), Rosalie Léonard (herbarium of the University of Sherbrooke) and Serge Gauthier (collections of the Musée de la nature et des sciences of Sherbrooke).

Guide

Since 2017, the IQBIO has undertaken the creation of a reference guide “ What to do when you inherit a research collection ? "Treating different possibilities that the heirs of these collections to safeguarding them under the best conditions. In 2018 and 2019 , all the institutions designated as accepting orphan collections were contacted to obtain information on the value to be given to a collection and on tax credits. The data is almost complete but some validations remain to be done.

Survey

In July 2018, a survey was conducted with 211 university researchers holding natural sciences research collections. 78 of them responded (see results in Appendix 2). This survey conducted throughout Quebec demonstrated an important and urgent need to be able to safeguard natural science collections in the university environment.

Financing and Budget

Nineteen foundations and companies (see Appendix 3) were approached to obtain grants for the collection register committee, but without success.

Budgetary data for updating the Collections Register are presented in Appendix 4. As of December 31, 2019, there is no more money from external funding to continue the updating and maintenance of the collections register.

Conclusion

The updated Collections Register allows the IQBIO to keep accurate statistics on the number, nature and location of the numerous and diverse Quebec natural sciences research collections scattered throughout the territory. Thus, the IQBIO can better meet its mission and be able to recommend or take action to preserve certain collections whose situation is precarious. The Collection Register project is constantly evolving, as old collections disappear and new collections are added. Given the lack of resources to hire staff assigned to the registry, we are counting on volunteer work for the time being to reach the objectives set for 2020. These objectives are :

1. Relaunch officials who have not returned the complete questionnaire ,
2. Ensure the updating of the Registry;
3. Search for new collections to add to the Registry
4. Visit known collections as part of validation visits;
5. Conduct interviews for the "Collector of the month" and write articles for publication;
6. Organize meetings and workshops to share knowledge about natural sciences research collections or to instruct collection managers on best practices for documenting and sharing metadata or data about their collections.
7. Finish the reference guide " What to do when you inherit a research collection ?" "
8. Organize a new fundraising campaign
9. Find partner institutions to develop collection safeguarding projects.

APPENDIX 1. Update of the Collections Register data (January 2020)

Tables 1, 2 and 3 summarize the statistics related to the distribution of natural sciences collections according to their type, location and status as well as the progress of their cataloguing

Table 1. Distribution of active Québec natural sciences research collections according to their taxonomic or ecological type and status (2019).

Type of collection		Number	Percentage	Status (number)			
				Public	Parapublic	Private	Uncertain
Ecological		11	5	3	2	4	2
Taxonomy	Arachnology	9	4	2	2	5	-
	Bryologie	10	5	3	4	3	-
	Entomology	48	22	11	12	25	-
	Herbarium	44	20	10	24	9	1
	Herpetology	4	2	2	2	-	-
	Ichthyology	10	5	4	6		-
	Invertebrates (marine , freshwater , terrestrial)	10	5	6	2	2	-
	Malacology	11	5	5	4	2	-
	Mammalogy	9	4	-	7	2	-
	Mycology	22	10	2	18	2	-
	Myriapodology	3	1	1	1	1	-
	Ornithology	14	6	1	10	2	1
	Phycology	9	4	3	4	2	-
Parasitology	4	2	4	-	-	-	

Table 2. Distribution of active Québec natural sciences research collections according to their conservation place and their status (2019).

Conservation places	Number of collections with status			Total	
	Public	parapublic	Private	Number	Proportion (%)
Government laboratories or museums (Canada, Quebec or Montreal)	51	-	1	52	24
Crown corporations laboratories of (ex : Hydro-Québec)	-	-	-	-	-
Universities	6	90	6	102	47
Collegial institutions	-	7	-	7	3
Private Museums of Public Interest Incorporated as non-profit corporations	-	-	13	13	6
Private homes of individual owners	-	-	34	34	16
Others (ex : Chicobi Camp-School , private laboratories)	-	1	9	10	4

Four collections with uncertain status were ignored in the calculations.

Table 3. Progress in cataloging data from Quebec natural science research collections .

Cataloging code	Number (and percentage) of collections with status							Total	
	Public	parapublic	Private hosted in a public institution	Private hosted in a semi-public institution	Private hosted in a private institution	Private at home	Uncertain	Number	%
C1	10	38	-	-	15	9	-	72	33
C2	4	10	-	-	-	3	-	17	8
C3	4	5	-	-	4	1	1	15	7
C4	5	2	-	-	-	1	-	8	4
C5	28	30	1	5		17	5	86	39
ND	3	13	-	-	-	2	2	20	9

C1 : Completely computerized data catalog

C2 : Partially computerized data catalog

C3 : Complete manuscript of available data catalog

C4 : Incomplete manuscript of available data catalog

C5 : No catalog known to date

ND : Undefined

APPENDIX 2

Safeguard Quebec universities natural sciences research collections

Survey data

In July 2018, a survey was conducted with 211 university researchers holding natural sciences research collections. 78 of them replied. Most of the time, those who have not responded do not have collections. This survey conducted throughout Quebec demonstrated an important and urgent need to be able to safeguard natural science collections in the university environment. The survey had nine questions. The responses are summarized in the following text.

Question 1: Your research concerns which group (s) of organisms ?

We found that the most studied organisms are, according to the survey data, the plants, insects and other invertebrates that make up more than half of the taxa.

Table 1: Distribution of organisms studied in Quebec universities environment.

<u>taxon</u>	<u>%</u>
Algae	4
Arachnids	1
Mushrooms	6
Insects	10
Invertebrates (others)	8
Lichens	5
Mammals	7
Shellfish	3
Birds	6
Parasites	1
Pisces	6
Plants	33
Others	10

Question 2 : Did you have to keep specimens / samples as part of your research ?

The majority of researchers (90%) have kept natural sciences research collections for their work.

Question 3 : At the end of your research projects, what happens to your specimens / samples ?

This question allows us to better understand how the natural science collections of researchers in Quebec are managed at the end of their research project. Almost half of them retain their collections in their own lab, while the third carries their collections in academic or private collections like herbariums or insectariums. A good number of collections are not kept.

Table 2 : Identification of storage locations for natural science collections from university research

Collection storage locations	%
The collections are deposited in a space in your laboratory	46
The collections are deposited in academic or private collections (herbarium, insectarium, etc.)	33
Collections are not kept	14
No information	7

Question 4 : During a student project, who usually takes care of depositing the collections ?

In almost half of the time, it is the students who take care of the collections. Since they have little time to deal with it at the end of their project, it is often the technicians or researchers who are responsible.

Table 3 : Identifications of persons responsible of collections from university research

People responsible for collections	%
Students	47
Researchers	26
Technicians	23
Others	4

Question 5 : What are the difficulties encountered in preserving your collections ?

It is often the lack of space that drives researchers to dispose of their collection. But also the deterioration of specimens as well as conservation issues can be problematic.

Table 4 : Difficulties in preserving collections from university research

Difficulties in preserving collections	%
Lack of space	46
Deterioration of specimens, preservation problem	20
Other difficulties	14
No difficulty	20

Question 6 : What percentage do you estimate the loss of collections ?

Most of the researchers interviewed estimate the loss of collections at less than 10%.

Table 5: Estimated loss of collections from university research

Estimated loss of collections	%
Any	28
Between 1 and 10%	38
Between 10 and 40%	24
Between 40 and 70%	2
More than 70%	8

Question 7 : How long do you keep your specimens / samples for ?

In most cases, the lifespan of a natural science collection from Québec researchers is more than 10 years. Very few are destroyed in less than 1 year after their creation.

Table 6 : Estimated lifetime of a collection of natural science from research in the university environment

Life time	%
Less than 1 year	3
Less than 5 years	28
Less than 10 years old	18
Over 10 years	51

Question 8 : How often do you collect specimens / samples ?

Most of researchers in Québec universities collect specimens from one to several times a year.

Table 7: Frequency of collections of specimens kept in university environment

Harvest frequency	%
Several times a year	61
Once a year	21
Once every 2 years	2
More than every 2 years	16

Question 9 : Do you plan to collect new specimens / samples in the future?

Over 74% of Quebec university researchers plan to return to collect new specimens / samples in the future. 17% of them are not sure and 9% do not plan research requiring specimen collections.

APPENDIX 3 . Institutions with which there was a request for funding in 2018 and 2019.

- Alan and patricia Koval foundation
- Crabtree foundation
- Eric t. Webster foundation
- Canadian Donner Foundation
- GDG Foundation
- Saucier Foundation
- Galin foundation
- James Richardson and sons, limited
- The Catherine and Fredrik Eaton charitable foundation
- The John David and Signy Eaton charitable foundation
- Zeller Family foundation
- Honda
- Nexen
- National Bank Canada
- Charles and Dale Young foundation
- Marjorie and Gerald Bronfman Foundation
- The Bradstreet family foundation
- The Catherine and Maxwell Meighen foundation
- The John and Pat McCutcheon charitable foundation

APPENDIX 4 . Annual budget allocation for the update of the Collections Register (2015 to 2019) as of December 31, 2019.

	2015 & 2016 & 2017 achievements	Forecasts 2018-2019	2018-2019 achievements
Revenues			
External financing	35,000		
Carryover from the previous year		20,935	20,935
IQBIO contribution	14,000		
Total (\$)	49,000	20,935	20,935
Labor expenses			
1) Computerization of existing data	400		
2) Monitoring / Research collections	5,120	1250	3490
3) Questionnaire / Update of the Register	7,120	2100	2450
4) Visits	700	2500	500
5) Database	1,920	1200	2310
6) Reports	3,480	2250	2420
7) Financing	4,060	1600	3665
8) Other s (Survey, articles, guide)	4,430	3500	5800
Total (\$)	27,230	14,400	20,635
Disbursements			
Displacement cost	180	1,600	300
Software		100	
Office costs	145	150	
Consultant	510	400	
Other		450	
Total (\$)	835	2,700	300
Grand Total (\$)	28,065	17,100	20,935
Balance (revenues - expenses) (\$)	20,935	3,835	0