



INDICATOR: Biodiversity in Ontario's postsecondary curricula

Strategic Direction: Engage People

Target: 1. By 2015, biodiversity is integrated into the elementary, secondary and postsecondary curricula, including schools of business.

Theme: Conservation Response – Education and Awareness

Previous version: [Biodiversity in Ontario's postsecondary curricula 2015](#)

Background Information

As countries around the world face complex environmental issues, there is a growing recognition that environmental education has a key role to play in a broad range of academic disciplines. Environmental education, including an awareness of the importance of biodiversity, is a vital tool to help people understand the nature and complexity of environmental challenges and build their capacity to take appropriate action (Pooley and O'Connor 2000; Smith et al. 2011).

The extent to which environmental education is incorporated into the curriculum of Ontario universities was unknown prior to the establishment of this target. In 2015, an assessment was conducted through the Trent Centre for Community Based Education to determine how and to what degree biodiversity was incorporated into university education in Ontario. This assessment was repeated in 2020 to assess change. This indicator provides an assessment of the extent to which biodiversity has been incorporated into the curriculum of select Ontario universities.

Data Analysis

A detailed review of the curricula of six Ontario universities was conducted to understand the degree to which biodiversity has been incorporated into university undergraduate and graduate education, with a focus on business schools. Taking a focussed look at business schools is a way to understand how to incorporate biodiversity into more businesses in the future. The universities in the index included: Carleton University, University of Guelph, Lakehead University, the University of Toronto, Trent University and the University of Ontario Institute of Technology. These universities were considered a representative of the diversity of universities in Ontario, including small and large universities covering a wide geographic scale. The universities within this index represent 29% of the 21 universities in Ontario. In 2020 there was a total population of more than 151,000 students enrolled at these six universities.

The course descriptions of 410 undergraduate and 333 graduate programs were assessed to determine whether or not the concept of biodiversity was included in core or elective courses (Table 1). Approximately 13,800 courses were assessed at the undergraduate level, and 4,050 courses at the graduate level. Programs that were offered only as 'minors' were excluded from the assessment. A list of keywords associated with the concept of biodiversity (Table 2) was generated and a keyword search was conducted on university academic calendars in PDF format,

using the program Mendeley®. If a keyword was present within core or elective courses for a particular program, that program was considered to include biodiversity content.

Table 1. Definitions of university programs and core and elective courses.

Program	An assortment of courses that lead toward a degree at the undergraduate or graduate level. Programs consist of a certain number of core and elective courses.
Core course	A course that is required within a particular undergraduate or graduate program.
Elective course	A course that is not required, but is optional to take within a particular program.

Within academic calendars the keyword with greatest frequency was “environment”. Some courses that included keywords were excluded, because the course descriptions did not suggest biodiversity content. For example, education courses that discussed learning in a “seminar environment”, or computer courses about the “ecology of online learning” were not considered to have biodiversity content. Further details on the original methodology, analyses and results are available in a companion technical report (McCallum et al. 2014).

Table 2. List of keywords used to search university academic calendars for biodiversity education content.

Biodiversity/biological diversity/diversity	Invasive alien species
Biodiversity threats	Nature
Biosphere	Nature education
Climate change	Natural resource(s)
Composition, structure and function of biological systems	Preservation
Conservation/conservation biology	Pollution
Ecology/ecological	Species diversity
Ecosphere/ecospheric security	Species extinction
Ecosystem/ecosystem diversity/ecosystem health or integrity	Stewardship
Endangered species/species at risk	Sustainability
Environment/environmental	Taxonomy
Evolution	Value of nature
Genetic diversity	Wilderness
Human impacts on the environment	Wildlife

Results

Trend: Improvement Data Confidence: High Geographic Extent: Provincial

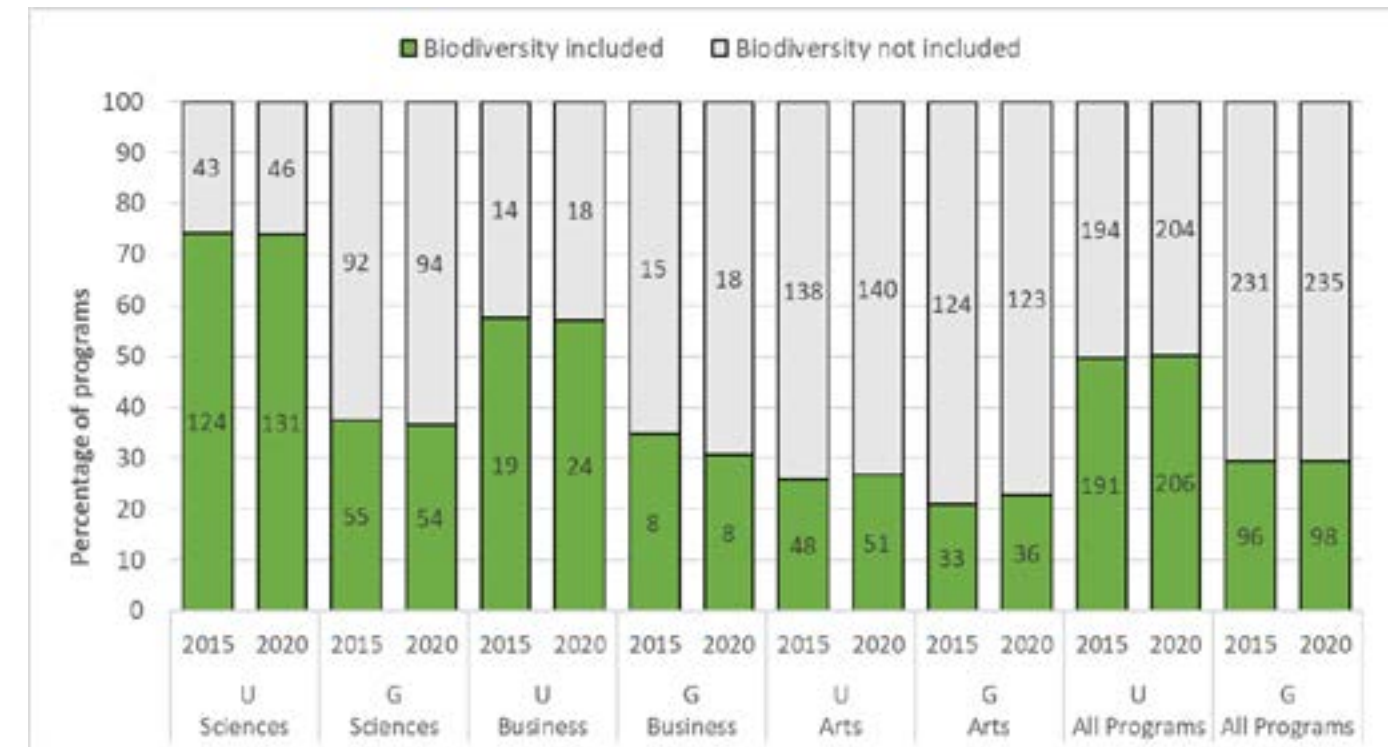


Figure 2. Summary of university biodiversity content overall (all programs) and by category (sciences, business and arts) within undergraduate (U) and graduate (G) programs in 2015 compared to 2020.

Status

- Biodiversity has been integrated into some postsecondary curricula in Ontario, including schools of business. The percentage of programs with some biodiversity content, both overall and by program, changed very little between 2015 and 2020.
- In 2020, 410 undergraduate level program descriptions were reviewed for inclusion of biodiversity keywords; a slight increase from the 385 programs reviewed in 2015). Reference to the concept of biodiversity was indicated in half (50.2%) of the undergraduate programs, versus 49.5% in 2015.
- At the graduate level, 333 programs were reviewed in 2020, of which 29.4% included biodiversity keywords. This percentage was consistent with 2015 data, which looked at 327 programs; 29.4% of which included biodiversity keywords.
- The concept of biodiversity was most prevalent within undergraduate science programs. Of the 177 undergraduate science programs reviewed, 74% included biodiversity keywords, mostly within life sciences, which was comparable to the 74.3% (167 programs) in 2015. At the graduate level, 36.5% of the 147 science programs included biodiversity keywords, again, most commonly within life sciences, this represents a slight decrease compared to 37.4% from the 2015 review.



- In 2020, 57.1% of the 42 undergraduate programs reviewed contained the biodiversity keywords, while in 2015, 57.6% of the 33 undergraduate business programs reviewed included the biodiversity keywords. Meanwhile, 30.8% of the 26 graduate-level business programs included the concept of biodiversity in 2020 compared to the 34.8% of the 23 graduate-level programs in 2015.
- Undergraduate arts programs showed fewer references to biodiversity. Of the 191 programs assessed in 2020, only 26.7% included relevant keywords in 2020, up from the 186 courses reviewed and 25.8% in 2015. Programs in Anthropology and Geography had the highest degree of inclusion. Nearly one-fifth (22.6%) of the 159 arts programs at the graduate level included biodiversity key terms in 2020, showing a slight rise from 21% in 2015.

Links

Related Targets: N/A

Related Themes: N/A

Web Links

Carleton University. 2021. 2020-2021 Graduate Calendar. <http://calendar.carleton.ca/grad/>

Carleton University. 2021. 2020-2021 Undergraduate Calendar. <https://calendar.carleton.ca/undergrad/>

Carleton University. 2021. About Carleton. <http://carleton.ca/about/>

Lakehead University. 2021. Undergraduate Programs. <https://www.lakeheadu.ca/programs/undergraduate-program>

Lakehead University. 2021. Graduate Studies. <https://www.lakeheadu.ca/programs/graduate>

Lakehead University. 2021. About Lakehead University. <https://www.lakeheadu.ca/about/overview>

Trent University. 2021. Academic calendar 2020-2021 undergraduate and graduate programs. <https://www.trentu.ca/registrar/academic-calendar/undergraduate-calendar>

Trent University. (no date). Trent facts. <http://www.trentu.ca/about/facts.php>

University of Ontario Institute of Technology. 2021. Undergraduate and graduate calendars. <https://ontariotechu.ca/current-students/academics/academic-calendars/>

University of Toronto. 2021. Faculty of Arts and Science 2020-2021 calendar. <https://fas.calendar.utoronto.ca/>

University of Toronto. 2021. School of Graduate Studies academic calendar 2020-2021. <https://sgs.calendar.utoronto.ca/>

University of Toronto. 2020. Quick facts. <https://www.utoronto.ca/about-u-of-t/quick-facts>

University of Guelph. 2021. Academic calendars. <http://www.uoguelph.ca/academics/calendars/>



University of Guelph. (2020). Fact Book. <https://www.uoguelph.ca/about/doc/UofG-Fact-Book-2019-2020.pdf>

University of Ontario Institute of Technology. 2019. Fact sheet. <https://ontariotechu.ca/sites/oir/university-data/enrolment-dashboard/index.php>

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References

McCallum, J., P. Elliot, and T. McIntosh. 2014. Integration of biodiversity into the curricula of select Ontario universities. State of Ontario's Biodiversity Technical Report Series, Report #SOBTR-01. Ontario Biodiversity Council, Peterborough, ON. [Available at: <http://sobr.ca/biosite/wp-content/uploads/SOBTR-01-Final1.pdf>]

Pooley, J. A., and M. O'Connor. 2000. Environmental education and attitudes: Emotions and beliefs are what is needed. Environment and Behavior 32: 711-723.

Smith, A. L., D.R. Bazely and N.D. Yan. 2011. Missing the boat on invasive alien species: A review of post- secondary curricula in Canada. Canadian Journal of Higher Education 41:34-47.

Citation

Ontario Biodiversity Council. 2021. State of Ontario's Biodiversity [web application]. Ontario Biodiversity Council, Peterborough, Ontario. [Available at: <http://ontariobiodiversitycouncil.ca/sobr> (Updated: June 2, 2021)].