

An Iconic Woman Scientist: Celebrating a Coleopterist's Legacy in an Understudied and Gendered Field of Science

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Gender disparity in science is a perennial, persistent, and complex issue. Despite advancements in recent decades, women are still significantly underrepresented in many scientific and academic fields (Huang et al., 2020; Avolio et al., 2020, 2023). This imbalance can be seen in various aspects, including the number of women in research positions, leadership roles, and academia. The overarching goal has always been to empower women in science and narrow the women-men disparity, aligned with the United Nations Sustainable Development Goals (UN SDGs), particularly Goal 5 on Gender Equality.

Various barriers contribute to women's underrepresentation in science, including intrapersonal, family, educational, social, institutional, and work-economic factors (Avolio et al., 2020, 2023). Opportunities for women in research engagements are negatively influenced by gender roles, gender biases, gendered professional standards, family responsibilities, and citizenship (Hosseini & Sharifzad, 2021; Tabassum & Nayak, 2021). The United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2020) has reported that only 30% of the world's researchers are women. In India, Biology is significantly male-dominated, with women's participation only at 37% (Paswan & Singh, 2020). The editorial boards of biodiversity conservation, environmental biology, and natural resource management journals also underrepresent women, narrowing research productivity and impact among women (Cho et al., 2014; Liévano-Latorre et al., 2020). Women in science frequently face challenges, including a lack of mentorship, limited networking opportunities, and insufficient professional advancement support compared to their male counterparts. Bloodhart et al. (2020) reported that women students are performing well but remain undervalued in Science, Technology, Engineering, and Mathematics (STEM) disciplines. This indicates that numbers have gradually increased over the years but remain insufficient to significantly represent women's voices in professional spaces.

Vitug (1994) has asserted that there are many women in science in the Philippines. The Philippine Science Education Institute (SEI), based on data from 1990 to 2015, claimed that the number of women in science and technology is increasing. Approximately 45% of the country's undergraduate degree holders in these fields were women (Sison, 2023). However, they have long struggled and continue to overcome the stereotype of being tied to domestic and reproductive roles that are often unpaid (Collas-Monsod, 2010; Abrigo & Francisco-Abrigo, 2019). Work-life balance is a strong determinant, as women are often expected to take on more domestic responsibilities, which can hinder their professional growth. This is further evident in the records of scientific productivity, with women still outnumbered by men in terms of the number of publications (Reyes & Reyes, 2015).

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Women's subordination is even more evident in highly specialized fields of science like Coleopterology, a sub-field of entomology that deals with the study of beetles (Coleoptera). While there is no published count of women working in this field, it is possible to cite very few women specialists from old and recent scientific publications. Moreover, Coleopterology is an understudied field, with many species remaining unknown to science. Workers hypothesize that many species have undergone silent extinction – lost to science even before being properly named and documented (Löbl et al., 2023; Cabras et al., 2023; Medina et al., 2023). Baltazar (2001) emphasized the dwindling number of expert workers in insect taxonomy and systematics. This is the primary reason why celebrating iconic female scientists is more than an attempt to honor a person. It is a deliberate move to inspire other women and foster gender equality in the academic and research world.

Dr. Analyn Anzano Cabras (**Figure 1**) was a leading Filipino weevil specialist in the Philippines. She served as a Research Associate at the [California Academy of Sciences](#) (CAS) and the Philippine National Museum of Natural History, a Fellow of the Linnean Society of London, a National Geographic Explorer, a [Lakeside Research Fellow](#) at CAS, and an International Union for the Conservation of Nature (IUCN) Red List Assessor. She was among the 2020 Future Science Leaders by the National Academy of Science and Technology (NAST), a [2021 National Geographic Early Career Leader](#), and one of the three Women of Science featured by National Geographic in 2021. She was aptly called a biologist, Coleopterist, conservationist, ecologist, and taxonomist by the National Geographic Society (Maloney, 2019).



Figure 1. Dr. Analyn A. Cabras (July 17, 1986, to December 7, 2024). Photo Credits: National Geographic Society.

Her academic and research career flourished at the University of Mindanao (UM) in Davao City, Philippines, where she was employed from July 2013 to November 2022. She served as the founding Director of the Coleoptera Research Center (CRC) and the Editor-in-Chief of the Journal of Tropical Coleopterology (JTC), the only scientific journal specializing in the study of beetles in the Philippines ([University of Mindanao, 2024](#)). She spent much of her career at UM looking for new beetle species, transcending local and international boundaries to better understand Philippine biodiversity. She has notably named *Metapocyrtus um* [Cabras & Van Dam, 2021](#), after the university, as the species resembles the logo colors. She also dedicated a species to UM President Guillermo P. Torres Jr., *M. (Artapocyrtus)*

willietorresi Cabras & Medina, 2018. She was pivotal in the establishment of the Erasmus+ International Credit Mobility Program between UM and Daugavpils University (Latvia, Europe). Through this program, she was able to open doors of opportunity for many Filipino scholars to study in Latvia and advance their research careers, including the first author (Figure 2).



Figure 2. Dr. Analyn A. Cabras (in a white T-shirt, second from the right) deploys another batch of Erasmus+ scholars to Daugavpils University (Latvia) at the Francisco Bangoy International Airport in Davao City, Philippines. Photo Credits: Melody Joy Dagta.

Her latest work affiliation was with the Davao Oriental State University (DOrSU) in Davao Oriental, Philippines, where she has served as an Associate Professor and Head of the Terrestrial Invertebrate Research Laboratory (TIRL) under the University Research Complex (UResCom) from April 2023 until the date of her passing on December 7, 2024. Having founded the TIRL herself, she relentlessly dedicated her time to examining specimens and mentoring her colleagues and students on weevil science. Even with her short stint at DOrSU, she has established numerous landmark partnerships, including the California Academy of Sciences (CAS), Kyushu University, Canada Museum of Natural History, Daugavpils University, University of Immaculate Conception (UIC), and the Philippine National Museum of Natural History (PNMNH), among others. She has empowered her mentees to learn the intricate details of beetle taxonomy and systematics. One of her notable co-authorships was with two undergraduate students who also became her legs doing field work in various mountain ecosystems when she had to limit strenuous activities due to her progressing heart condition. Together, they were able to publish several papers, one of which is a paper in *Zootaxa* that named three new mimetic weevils: *Metapocyrtus inangsabong*, *M. lumad*, and *M. (Trachycyrtus) uphagpula* (Obrial et al., 2024). As a self-proclaimed introvert, Cabras enjoyed the company of very few and selected colleagues and students – to whom she usually shared her discoveries and aspirations for Filipino science. One of her close mentees stated:

“Miss Ann reminds me of many things. First, every time I see a weevil or hear the word weevil, my mind immediately goes to her. She was one of the most down-to-earth researchers I knew—always willing to lend a hand to those who needed her expertise. But beyond being an excellent researcher, she was a wonderful person. More than a research colleague, she was a great friend—always supportive, always reminding me that I was still young, with the freedom to explore, to be everywhere, and to do what makes me feel alive. I will never forget her last words: her vision for the Natural History Museum of the Philippines to have a well-curated reference collection of beetles, ensuring that future researchers and conservationists could benefit from it” (Tristan Luap P. Senarillos, 2025).

She has profoundly contributed to DOrSU’s regenerative futures agenda, utilizing futures thinking in advancing regenerative development (Ponce & Villegas, 2022; Villegas & Ponce, 2024). The projects that she co-led with the first and second authors, particularly on the implementation of the Philippine Coleoptera Expedition (PhilColEx), are fundamental

to positioning DOrSU as a regenerative futures university at the national and international platforms. While the team described new species and established one of the largest Coleoptera collections in the country, they also endeavored to make Coleoptera research accessible to *Mindanaoans* and the Filipino scientific community in general. As of this date, this project has produced numerous scientific publications and described many novel Coleoptera species, with ample support from the university's Center for Futures Thinking and Regenerative Development (CFTRD). Notably, she named *Metapocyrtus poncei* Cabras & Medina, 2021, after Dr. Roy G. Ponce, DOrSU President, recognizing his contributions to the inscription of the Mt. Hamiguitan Range Wildlife Sanctuary (MHRWS) as a World Heritage Site by UNESCO. She also co-authored the description of *Gauromaia dorsu* Medina & Cabras, 2023, which recognized the university's initiatives in championing wildlife protection, biodiversity conservation, and regenerative development.

As an advocate of inclusion and empowerment, she has honored several Indigenous Cultural Communities (ICCs)/ Indigenous Peoples (IPs). She has surveyed many ancestral lands, and as a way of honoring IPs in their environmental initiatives, she dedicated several scientific names to them. Some are the *M. mranaw* Cabras, 2024, *M. (Artapocyrtus) madayaw* Cabras & Medina, 2023, *Pachyrhynchus panumanon* Cabras & Medina, 2022, *Pachyrhynchus obumanuvu* Cabras, Medina, and Van Dam, 2021, and *M. tagabawa* Cabras, Medina, and Bollino, 2020. This gesture further mainstreamed the pivotal but undervalued roles of the Indigenous peoples in safeguarding the natural environment.

Cabras has extensively worked on the systematics of the Tribe Pachyrhynchini, particularly the genera *Pachyrhynchus* and *Metapocyrtus*. So far, she was the only Filipina to ever achieve this, giving her the name "Queen of Philippine Weevils." She led and co-implemented various local and international biodiversity research endeavors to advance beetle research and conservation in the Philippines, published 103 scientific papers, co-published two books, and described at least 94 new species of beetles to science before her passing. She was working on a new paper describing more than 20 *Metapocyrtus* (*Trachycyrtus*) species and was exchanging insights with the Coleoptera Research Team (CRT) at the hospital bed. Many new species remain undescribed from her collections, which her mentees are now working on for publications.

Apart from her extensive scientific work, Cabras is also an amateur artist and photographer. She has a keen interest in painting, and her photography enthusiasm dates back even before she started biodiversity research. Most of her inspirations are her jewel weevils and nature, further solidifying her stature as a naturalist. On November 13, 2023, she organized a biodiversity art jam in the City of Mati, inviting her friend Kenneth Chin, a Singaporean natural artist, to teach High School students the intricacies of biodiversity art and help set up the City's first biodiversity art wall (Figure 3). This is just one of her many initiatives in biodiversity art, which she co-organized with DOrSU's M2P2 Program, spearheaded by the third author. To this date, this art wall stands as one of the key attractions in the FGR Park and Baywalk, conveying a lasting message on the importance of wildlife conservation to the public.



Figure 3. Dr. Analyn A. Cabras (in orange dress) participates in painting a biodiversity art wall at the FGR Park and Baywalk, City of Mati, Philippines.

Prior to her untimely passing, she was nominated as an Outstanding Young Scientist (OYS) by the National Academy of Science and Technology (NAST) Philippines. The nomination was submitted on November 29, 2024, a few days before she entered the hospital for her open-heart surgery. Her nominator quoted in the assessment:

“At the age of 38, Cabras is now widely recognized as one of leading authorities on weevils in the Philippines and in the Southeast Asian region. Her contributions to this field are far-reaching and is clearly demonstrated through her scientific publications, which is of impressive quality and scope... Her work on insect arthropods—among the most diverse of invertebrate groups, now serve as important primary reference materials to formal biology education in the Philippines... If her research activities, projects, and track record in publication are any indication, Cabras is still on an upward trajectory in her career” (Dr. Arvin C. Diesmos, 2024).

With her contributions to science, especially in the field of tropical coleopterology and biodiversity conservation, Cabras was honored by globally renowned scientists by naming her in several new Coleoptera species: *Cacia cabrasae* Medina, Vitali, and Barševskis, 2023, *Olenecamptus cabrasae* Medina, 2023, *Cleomenes cabrasae* Barševska and Barševskis, 2020, *Callimetopus cabrasae* Barševskis, 2018, *Lamprobityle cabrasae* Barševskis, 2018, *Doliops cabrasae* Barševskis, 2017, *Pachyrhynchus cabrasae* Rukmane & Barševskis, 2016 (**Figure 4**). In the parlance of taxonomy, naming a novel species after a natural person is a form of scientific honor. The honor is usually given to those who have significantly contributed to scientific progress – a definition that accurately describes Cabras as a Filipina scientist.



Figure 4. *Pachyrhynchus cabrasae* Rukmane & Barševskis, 2016, a species named in honor of the late Dr. Analyn A. Cabras, documented at 900 masl, Pantaron Range, Bukidnon, Philippines. Photo Credits: Tristan Luap P. Senarillos (2021).

The life story of Cabras may be brief, but the impact of her works and influence is profound and will resonate for generations to come. In a male-dominated field where opportunities for women are scarce, she has exemplified resilience and determination, carving a path for others to follow. Her achievements highlight her irrefutable competence and compassion in challenging societal norms, inspiring young women to pursue scientific careers despite obstacles. The legacy of Dr. Analyn A. Cabras serves as a powerful reminder of the strides that can be made when one dares to break barriers and defy expectations, making her an Iconic Woman Scientist and a Filipina heroine for the present and future generations.

Literature Cited

- ABRIGO, M. R., & FRANCISCO-ABRIGO, K. (2019). Counting women's work in the Philippines. *PIDS Discussion Paper Series*, 2. <https://www.econstor.eu/bitstream/10419/211076/1/1666363286.pdf>
- AVOLIO, B., CHÁVEZ, J., & VÍLCHEZ-ROMÁN, C. (2020). Factors that contribute to the underrepresentation of women in science careers worldwide: A literature review. *Social Psychology of Education*, 23(3), 773-794. <https://doi.org/10.1007/s11218-020-09558-y>
- AVOLIO, B., PARDO, E., & PRADOS-PENÁ, M. B. (2023). Factors that contribute to the underrepresentation of women academics worldwide: A literature review. *Social Psychology of Education*, 27(1), 261-281. <https://doi.org/10.1007/s11218-023-09838-3>
- BALTAZAR, C. R. (2001). Directions of Systematic Entomology in the Philippines. *Transactions of the National Academy of Science and Technology Philippines*, 23, 95-104. <http://doi.org/10.57043/transnastphl.2001.5119>
- BARŠEVSKIS, A. (2018). To the Knowledge of Long-Horned Beetles (Coleoptera: Cermabycidae) of the Oriental Region. Part I. *Acta Biologica Universitatis Daugavpiliensis*, 18(2), 285-294.
- BLOODHART, B., BALGOPAL, M. M., CASPER, A. M., SAMPLE MCMEEKING, L. B., & FISCHER, E. V. (2020). Outperforming yet undervalued: Undergraduate women in STEM. *PLOS ONE*, 15(6), e0234685. <https://doi.org/10.1371/journal.pone.0234685>
- BOLLINO, M., MEDINA, M. N., & CABRAS, A. A. (2020). Three new *Metapocyrtus* Heller, 1912 (Curculionidae, Entiminae, Pachyrhynchini) from Mindanao Island, Philippines. *Journal of Tropical Coleopterology*, 1(1), 26-38. <https://www.jtcoleop.com/articles/634e5b9c-3a91-4982-84c9-683e4bcacd56.pdf>
- CABRAS, A. A., BUENAVENTE, P. A., & VILLEGAS, J. P. (2024). Two new species of *Metapocyrtus* Heller from Mindanao Island, Philippines (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini). *Ecologica Montenegrina*, 73, 125-137. <https://doi.org/10.37828/em.2024.73.13>
- CABRAS, A. A., VILLEGAS, J. P., PONCE, A. G., & MEDINA, M. N. (2023). *Metapocyrtus madayaw* sp. n. (Coleoptera: Curculionidae, Entiminae), a new flightless weevil from eastern Mindanao, Philippines. *Far Eastern Entomologist*, 490, 1-9. <https://doi.org/10.25221/fee.490.1>
- CABRAS, A. A., BAUL, M., VILLANUEVA, R. J., & MEDINA, M. N. (2022). *Pachyrhynchus panumanon* sp. nov., a new species of easter egg weevil (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini) from northern Mindanao, Philippines. *Journal of Tropical Coleopterology*, 3(1), 88-97. <https://doi.org/10.53716/jtc.3.1.11.2022>
- CABRAS, A. A., LAM, A. W., & VAN DAM, M. H. (2021). *Metapocyrtus um* sp. Nov., a new weevil species (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini) from Davao City, Mindanao island, Philippines. *Zootaxa*, 5068(4), 597-600. <https://doi.org/10.11646/zootaxa.5068.4.10>
- CABRAS, A. A., MEDINA, M. N., DONATO, J., & VAN DAM, M. H. (2021). *Pachyrhynchus obumanuvu* sp. nov., a new species of easter egg weevil (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini) from Mindanao Island, Philippines. *Baltic Journal of Coleopterology*, 21(1), 43-48. <https://bjc.sggw.edu.pl/article/view/6207>
- CABRAS, A. A., QUIMPAN, H., & MEDINA, M. N. (2021). *Metapocyrtus poncei* sp. nov., a new weevil (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini) from Davao Oriental, Mindanao Island, Philippines. *Journal of Tropical Coleopterology*, 2(2), 30-36. <https://doi.org/10.53716/jtc.2.2.5.2021>
- CABRAS, A. A., & MEDINA, M. N. (2018). *Metapocyrtus (Artapocyrtus) willietorresi* sp. n. (Coleoptera: Curculionidae) from Southern Mindanao (Philippines), with notes on its ecology and mimicry complex. *Baltic Journal of Coleopterology*, 18(2), 185-192. <https://bjc.sggw.edu.pl/article/view/6324/5432>
- CHO, A., JOHNSON, S. A., SCHUMAN, C., ADLER, J., GONZALEZ, O., GRAVES, S. J., HUEBNER, J., MARCHANT, D. B., RIFAI, S., SKINNER, I., & BRUNA, E. M. (2014). Women are underrepresented on the editorial boards of journals in environmental biology and natural resource management. *Peer J*. <https://doi.org/10.7717/peerj.542>
- COLLAS-MONSOD, S. (2010). Removing the Cloak of Invisibility: Integrating Unpaid Household Services in National Economic Accounts — the Philippines Experience. In R. Antonopoulos & I. Hirway (Eds.), *Unpaid work and the economy: Gender, time use and poverty in developing countries* (pp. 230-251). Springer. https://doi.org/10.1057/9780230250550_10
- HOSSEINI, M., & SHARIFZAD, S. (2021). Gender disparity in publication records: A qualitative study of women researchers in computing and engineering. *Research Integrity and Peer Review*, 6(1). <https://doi.org/10.1186/s41073-021-00117-3>
- HUANG, J., GATES, A. J., SINATRA, R., & BARABÁSI, A. (2020). Historical comparison of gender inequality in scientific careers across countries and disciplines. *Proceedings of the National Academy of Sciences*, 117(9), 4609-4616. <https://doi.org/10.1073/pnas.1914221117>

- LIÉVANO-LATORRE, L. F., DA SILVA, R. A., VIEIRA, R. R., RESENDE, F. M., RIBEIRO, B. R., BORGES, F. J., SALES, L., & LOYOLA, R. (2020). Pervasive gender bias in editorial boards of biodiversity conservation journals. *Biological Conservation*, 251, 108767. <https://doi.org/10.1016/j.biocon.2020.108767>
- LÖBL, I., KLAUSNITZER, B., HARTMANN, M., & KRELL, F. (2023). The silent extinction of species and taxonomists—An appeal to science policymakers and legislators. *Diversity*, 15(10), 1053. <https://doi.org/10.3390/d15101053>
- MALONEY, B. (2019). *Analyn Cabras: Waiting to be Discovered*. Edition overview - National Geographic Explorer. Retrieved December 17, 2024, from https://nationalgeographic.h5mag.com/adventurer_january_february_2021/waiting_to_be_discovered_2
- MEDINA, M. N., VILLEGAS, J. P., BARSEVSKIS, A., & VITALI, F. (2023). Catalog of the genus *Choeromorpha* Chevrolat, 1849 (Coleoptera: Cerambycidae: Lamiinae) in the Philippines with description of a new species from Luzon island. *Zootaxa*, 5375(4), 574-581. <https://doi.org/10.11646/zootaxa.5375.4.8>
- MEDINA, M. N., CUDERA, R., VILLEGAS, J. P., & CABRAS, A. A. (2023). Two new species of darkling beetles of the genus *Gauromaia* Pascoe, 1866 (Coleoptera: Tenebrionidae: Cnodalonini) from central and southern Mindanao with updated species geographic distribution and a key to species of the Philippine fauna. *Philippine Journal of Science*, 152(3). <https://doi.org/10.56899/152.03.34>
- OBRIAL, G. G., AGBAS, D. J., MEDINA, M. N., & CABRAS, A. A. (2024). Three new mimetic weevils (Coleoptera, Curculionidae, Entiminae) from Mt. Candalaga, Davao de Oro, Mindanao Island, Philippines. *Zootaxa*, 5541(4), 438-454. <https://doi.org/10.11646/zootaxa.5541.4.2>
- PASWAN, J., & SINGH, V. K. (2020). Gender and research publishing analyzed through the lenses of discipline, institution types, impact and international collaboration: A case study from India. *Scientometrics*, 123(1), 497-515. <https://doi.org/10.1007/s11192-020-03398-5>
- PONCE, R. G., & VILLEGAS, J. P. (2022). Beyond sustainability: Positioning regenerative futures in a Philippine State University. *Discourse and Communication for Sustainable Education*, 13(2), 5-12. <https://doi.org/10.2478/dcse-2022-0014>
- REYES, C. N., & REYES, J. A. (2015). Exploring publication Productivity in the Philippines: A 10-year gendered Analysis of six academic disciplines. *Asia-Pacific Social Science Review*, 15(1). <https://doi.org/10.59588/2350-8329.1042>
- SISON, M. (2023). *Filipinas stare through the glass ceiling in STEM fields*. UNESCO: Building Peace through Education, Science and Culture, Communication and Information. Retrieved February 27, 2025, from <https://www.unesco.org/en/articles/filipinas-stare-through-glass-ceiling-stem-fields>
- [UNESCO] UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. (2020, February 18). Women in Science. *UNESCO Institute of Statistics*. <https://uis.unesco.org/en/topic/women-science>
- UNIVERSITY OF MINDANAO. (2024). *Editorial Board*. Journal of Tropical Coleoptology. Retrieved December 17, 2024, from <https://jtcoleop.com/>
- TABASSUM, N., & NAYAK, B. S. (2021). Gender stereotypes and their impact on women's career progressions from a managerial perspective. *IIM Kozhikode Society & Management Review*, 10(2), 192-208. <https://doi.org/10.1177/2277975220975513>
- VILLEGAS, J. P., & PONCE, R. G. (2024). Regenerative futures: Why and how to move forward as a Philippine State University? *Davao Research Journal*, 15(No.2), 31-36. <https://doi.org/10.59120/drj.v15ino.2.169>
- VITUG, M. D. (1994). Fighting the patriarchy in growing numbers. *Science*, 263(5152), 1491-1492. <https://doi.org/10.1126/science.263.5152.1491>