

Joel H. Nitta

GRADUATE SCHOOL OF GLOBAL AND TRANSDISCIPLINARY STUDIES, CHIBA UNIVERSITY, CHIBA, JAPAN

Studying biology at the intersection of ecology and evolution from species to the globe

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Employment

Associate Professor

Graduate School of Global and Transdisciplinary Studies, Chiba University

Chiba, Japan

Apr. 2023 - present

Project Research Associate

Department of Integrated Biosciences, The University of Tokyo

Tokyo, Japan

Apr. 2020 - Mar. 2023

Peter Buck Postdoctoral Research Fellow

Department of Botany, National Museum of Natural History, Smithsonian Institution

Washington, DC

Jan. 2019 - Mar. 2020

Japan Society for the Promotion of Science Postdoctoral Research Fellow

Department of Botany, National Museum of Nature and Science

Tsukuba, Japan

Nov. 2016 - Dec. 2018

Education

PhD, Organismic and Evolutionary Biology

Harvard University

Cambridge, MA

Nov. 2016

MS, Biological Sciences

University of Tokyo

Tokyo, Japan

Mar. 2010

BA, Integrative Biology and Japanese Language

University of California, Berkeley

Berkeley, CA

May 2007

- Highest Honors in Integrative Biology
- Highest Distinction in General Scholarship

Grants

Japan Society for the Promotion of Science (Grant-in-Aid for Early-Career Scientists)

Evolutionary origins of endemic ferns on an island biodiversity hotspot

Tokyo, Japan

2022 - 2026

- \$31,000 (PI)

Smithsonian Institution Barcode Initiative

Biogeography of Polynesian Pteridophytes: Insights from DNA barcoding

Washington, DC

2019

- \$8,000 (Internal grant)

Japan Society for the Promotion of Science (Grant-in-Aid for JSPS Fellows)

Elucidating the evolutionary history of a polyploid fern species complex using next-generation sequencing

Tsukuba, Japan

2016 - 2019

- \$21,000 (Co-PI)

National Science Foundation Doctoral Dissertation Improvement Grant

Investigating the role of a cryptic life stage in fern evolution and community assembly

Cambridge, MA

2013 - 2015

- \$21,970 (Co-PI)

Awards

Intelligent Systems for Molecular Biology EvolCompGen COSI

Best Talk

Madison, WI (online)

2022

Japanese Society for Plant Systematics

Tokyo, Japan

The Young Scientist Award	2022
Japanese Society for Plant Systematics	Tokyo, Japan
Best Oral Presentation	2021
University of Tokyo	Tokyo, Japan
Japanese Government (Monbukagakusho: MEXT) Scholarship	2008
Department of Integrative Biology, University of California, Berkeley	Berkeley, CA
Departmental Citation	2007
University of California, Berkeley	Berkeley, CA
Regents and Chancellor's Scholar	2002

Teaching

UNDERGRADUATE

Biodiversity and Japan	Chiba, Japan
College of Liberal Arts and Sciences, Chiba University	2023 - present
Reproducible Data Analysis	Chiba, Japan
College of Liberal Arts and Sciences, Chiba University	2023 - present

GRADUATE

Data Science	Chiba, Japan
Graduate School of Global and Transdisciplinary Studies	2024 - present

WORKSHOPS

Spatial Phylogenetics Workshop	Oslo, Norway
ForBio, Natural History Museum, University of Oslo	June 2023
How to Use `targets` for Effective Workflows in R	Oslo, Norway
University of Oslo Library and Carpentry@UiO	June 2023
ASCS2022 Workshop on Reproducible Scientific Analysis	Online
ISCB 1st Asian Student Council Symposium	Dec. 2022
Modular, Reproducible Bioinformatics Workflows with the `targets` R package	Online
International Society for Computational Biology	June 2022

Software

For complete summary of projects on github, please see <https://github.com/joelnitta>

DEVELOPER AND MAINTAINER

- **canaper**
 - *Categorical analysis of neo-and paleo-endemism in R*
- **dwctaxon**
 - *Tools for working with Darwin Core Taxon data*
- **taxastand**
 - *Standardize species names across data sources*

MAINTAINER

- **restez**
 - *Access GenBank data locally*
- **rgnparser**
 - *Interface to gnparses in R*

Invited Talks

Tsukuba Botanical Garden Special Fern Exhibit

Tsukuba, Japan

FTOL and PPG2: The Cutting Edge of Pteridophyte Evolution and Systematics

2023

XVI Conference of the Indian Fern Society and International Symposium

Calicut, India (online)

DNA Barcoding of Fern Gametophytes: Past, Present, and Future

2022

21st Annual Meeting of the Japanese Society for Plant Systematics

Online

Phylogenetic systematics and community assembly processes in ferns

2022

- Young Scientist Award Lecture

Japan Pteridological Society Meeting at the 81st Annual Meeting of the Botanical Society of Japan

Noda, Japan

Fern flora of Moorea and Tahiti, French Polynesia: Community analysis using DNA barcodes

2017

*in Japanese

Publications

1. Kato, Y., **J. H. Nitta**, C. A. G. Perez, N. Adhitama, P. Religia, A. Toyoda, W. Iwasaki, and H. Watanabe (2024). "Identification of gene isoforms and their switching events between male and female embryos of the parthenogenetic crustacean *Daphnia magna*". In: *Scientific Reports* 14.1, p. 9407. DOI: [10.1038/s41598-024-59774-1](https://doi.org/10.1038/s41598-024-59774-1)
2. Kuo, L., S. Tang, Y. Huang, P. Xie, C. Chen, Z. Chang, T. Hsu, Y. Chang, Y. Chao, C. Chen, S. Fawcett, **J. H. Nitta**, M. Sundue, T. Kao, H. T. Luu, A. M. A. Mustapeng, F. P. Coritico, V. B. Amoroso, and Y. K. Thai (2024). "A DNA barcode reference of Asian ferns with expert-identified voucher specimens and DNA samples". In: *Scientific Data* 11.1, p. 1314. DOI: [10.1038/s41597-024-04161-8](https://doi.org/10.1038/s41597-024-04161-8)
3. **Nitta, J. H.** and W. Iwasaki (2024). "dwctaxon, an R package for editing and validating taxonomic data in Darwin Core format". In: *Journal of Open Source Software* 9.93, p. 6215. DOI: [10.21105/joss.06215](https://doi.org/10.21105/joss.06215)
4. Chen, C., S. Lindsay, **J. H. Nitta**, G. Rouhan, M. Sundue, L. R. Perrie, Y. Huang, W. Chiou, and K. Chung (2023). "Systematics and biogeography of the Old World fern genus *Antrophyum*". In: *Cladistics*, p. cla.12538. DOI: [10.1111/cla.12538](https://doi.org/10.1111/cla.12538)
5. **Nitta, J. H.** (2023a). "Ferns as a model system for evolutionary biology". In: *The Journal of Phytogeography and Taxonomy* 71.2, pp. 115-126. DOI: [10.18942/chiribunrui.0712-03](https://doi.org/10.18942/chiribunrui.0712-03)
6. **Nitta, J. H.** (2023b). "Machine learning methods reveal processes affecting abundance at multiple scales. A commentary on 'Global and regional drivers of abundance patterns in the hart's tongue fern complex (Aspleniaceae)'". In: *Annals of Botany* 131.5, pp. i-ii. DOI: [10.1093/aob/mcad024](https://doi.org/10.1093/aob/mcad024)
7. **Nitta, J. H.**, S. W. Laffan, B. D. Mishler, and W. Iwasaki (2023). "canaper: Categorical analysis of neo- and paleo-endemism in R". In: *Ecography*, p. e06638. DOI: [10.1111/ecog.06638](https://doi.org/10.1111/ecog.06638)
8. Song, M. J., C. J. Rothfels, E. Schuettpelz, **J. H. Nitta**, L. Huiet, F. Li, and K. M. Wefferling (2023). "Resolving deep relationships and revealing ancient whole-genome duplications in Pteridaceae using transcriptomic data". In: *American Fern Journal* 113.3. DOI: [10.1640/0002-8444-113.3.191](https://doi.org/10.1640/0002-8444-113.3.191)
9. **Nitta, J. H.** and S. M. Chambers (2022). "Identifying cryptic fern gametophytes using DNA barcoding: A review". In: *Applications in Plant Sciences* 10, p. e11465. DOI: [10.1002/aps3.11465](https://doi.org/10.1002/aps3.11465)
10. **Nitta, J. H.**, B. D. Mishler, W. Iwasaki, and A. Ebihara (2022). "Spatial phylogenetics of Japanese ferns: Patterns, processes, and implications for conservation". In: *American Journal of Botany* 109.5, pp. 727-745. DOI: [10.1002/ajb2.1848](https://doi.org/10.1002/ajb2.1848)
11. **Nitta, J. H.**, E. Schuettpelz, S. Ramírez-Barahona, and W. Iwasaki (2022). "An open and continuously updated fern tree of life". In: *Frontiers in Plant Science* 13, p. 909768. DOI: [10.3389/fpls.2022.909768](https://doi.org/10.3389/fpls.2022.909768)
12. **Nitta, J. H.**, J. E. Watkins Jr., N. M. Holbrook, T. W. Wang, and C. C. Davis (2021). "Ecophysiological differentiation between life stages in filmy ferns (Hymenophyllaceae)". In: *Journal of Plant Research* 134.5, pp. 971-988. DOI: [10.1007/s10265-021-01318-z](https://doi.org/10.1007/s10265-021-01318-z)
13. **Nitta, J. H.**, A. Ebihara, and A. R. Smith (2020). "A taxonomic and molecular survey of the pteridophytes of the Nectandra Cloud Forest Reserve, Costa Rica". In: *PLoS ONE* 15.11, p. e0241231. DOI: [10.1371/journal.pone.0241231](https://doi.org/10.1371/journal.pone.0241231)

14. **Nitta, J. H.**, J. E. Watkins Jr., and C. C. Davis (2020). "Life in the canopy: Community trait assessments reveal substantial functional diversity among fern epiphytes". In: *New Phytologist* 227.6, pp. 1885-1899. DOI: [10.1111/nph.16607](https://doi.org/10.1111/nph.16607)
15. Ebihara, A. and **J. H. Nitta** (2019). "An update and reassessment of fern and lycophyte diversity data in the Japanese Archipelago". In: *Journal of Plant Research* 132.6, pp. 723-738. DOI: [10.1007/s10265-019-01137-3](https://doi.org/10.1007/s10265-019-01137-3)
16. Ebihara, A., **J. H. Nitta**, Y. Matsumoto, Y. Fukazawa, M. Kurihara, H. Yokote, K. Sakuma, O. Azakami, Y. Hirayama, and R. Imaichi (2019). "Growth dynamics of independent gametophytes of *Pleurosoriopsis makinoi* (Polypodiaceae)". In: *Bulletin of the National Museum of Nature and Science, Series B (Botany)* 45.2, pp. 77-86
17. **Nitta, J. H.** and A. Ebihara (2019). "Virtual issue: Ecology and evolution of pteridophytes in the era of molecular genetics". In: *Journal of Plant Research* 132.6, pp. 719-721. DOI: [10.1007/s10265-019-01139-1](https://doi.org/10.1007/s10265-019-01139-1)
18. Gilbert, K. J., **J. H. Nitta**, G. Talavera, and N. E. Pierce (2018). "Keeping an eye on coloration: Ecological correlates of the evolution of pitcher traits in the genus *Nepenthes* (Caryophyllales)". In: *Biological Journal of the Linnean Society* 123.2, pp. 321-337. DOI: [10.1093/biolinnean/blx142](https://doi.org/10.1093/biolinnean/blx142)
19. **Nitta, J. H.**, S. Amer, and C. C. Davis (2018). "*Microsorium* × *tohieaense* (Polypodiaceae), a new hybrid fern from French Polynesia, with implications for the taxonomy of *Microsorium*". In: *Systematic Botany* 43.2, pp. 397-413. DOI: [10.1600/036364418X697166](https://doi.org/10.1600/036364418X697166)
20. **Nitta, J. H.**, J. Meyer, R. Taputuarai, and C. C. Davis (2017). "Life cycle matters: DNA barcoding reveals contrasting community structure between fern sporophytes and gametophytes". In: *Ecological Monographs* 87.2, pp. 278-296. DOI: [10.1002/ecm.1246](https://doi.org/10.1002/ecm.1246)
21. Pinson, J. B., S. M. Chambers, **J. H. Nitta**, L. Kuo, and E. B. Sessa (2017). "The separation of generations: Biology and biogeography of long-lived sporophyteless fern gametophytes". In: *International Journal of Plant Sciences* 178.1, pp. 1-18. DOI: [10.1086/688773](https://doi.org/10.1086/688773)
22. Zhou, X., L. Zhang, C. Chen, C. Li, Y. Huang, D. Chen, N. T. Thi, D. Cicuzza, R. Knapp, T. T. Tam, **J. H. Nitta**, X. Gao, and L. Zhang (2017). "A plastid phylogeny and character evolution of the Old World fern genus *Pyrrosia* (Polypodiaceae) with the description of a new genus: *Hovenkampia* (Polypodiaceae)". In: *Molecular Phylogenetics and Evolution* 114, pp. 271-294. DOI: [10.1016/j.ympev.2017.06.020](https://doi.org/10.1016/j.ympev.2017.06.020)
23. Pouteau, R., J. Meyer, P. Blanchard, **J. H. Nitta**, M. Terorotua, and R. Taputuarai (2016). "Fern species richness and abundance are indicators of climate change on high-elevation islands: evidence from an elevational gradient on Tahiti (French Polynesia)". In: *Climatic Change* 138, pp. 143-156. DOI: [10.1007/s10584-016-1734-x](https://doi.org/10.1007/s10584-016-1734-x)
24. Chen, C., **J. H. Nitta**, M. Fanerii, T. Y. A. Yang, F. Pitisopa, C. W. Li, and W. Chiou (2015). "*Antrophyum solomonense* (Pteridaceae), a new species from the Solomon Islands, and its systematic position based on phylogenetic analysis". In: *Systematic Botany* 40.3, pp. 645-651. DOI: [10.1600/036364415X689357](https://doi.org/10.1600/036364415X689357)
25. Ebihara, A., A. Yamaoka, N. Mizukami, A. Sakoda, **J. H. Nitta**, and R. Imaichi (2013). "A survey of the fern gametophyte flora of Japan: Frequent independent occurrences of noncordiform gametophytes". In: *American Journal of Botany* 100.4, pp. 735-743. DOI: [10.3732/ajb.1200555](https://doi.org/10.3732/ajb.1200555)
26. **Nitta, J. H.**, A. Ebihara, and M. Ito (2011). "Reticulate evolution in the *Crepidomanes minutum* species complex (Hymenophyllaceae)". In: *American Journal of Botany* 98.11, pp. 1782-1800. DOI: [10.3732/ajb.1000484](https://doi.org/10.3732/ajb.1000484)
27. **Nitta, J. H.**, J. Meyer, and A. R. Smith (2011). "Pteridophytes of Mo'orea, French Polynesia: Additional new records". In: *American Fern Journal* 101.1, pp. 36-49. DOI: [10.1640/0002-8444-101.1.36](https://doi.org/10.1640/0002-8444-101.1.36)
28. Ebihara, A., **J. H. Nitta**, and M. Ito (2010). "Molecular species identification with rich floristic sampling: DNA barcoding the pteridophyte flora of Japan". In: *PLoS ONE* 5.12, p. e15136. DOI: [10.1371/journal.pone.0015136](https://doi.org/10.1371/journal.pone.0015136)
29. Ebihara, A., **J. H. Nitta**, and K. Iwatsuki (2010). "The Hymenophyllaceae of the Pacific area. 2. *Hymenophyllum* (excluding subgen. *Hymenophyllum*)". In: *Bulletin of the National Museum of Nature and Science, Series B (Botany)* 36.2, pp. 43-59
30. Ebihara, A., **J. H. Nitta**, D. Lorence, and J. Dubuisson (2009). "New records of *Polyphlebium borbonicum*, an African filmy fern, in the New World and Polynesia". In: *American Fern Journal* 99.3, pp. 200-206. DOI: [10.1640/0002-8444-99.3.200](https://doi.org/10.1640/0002-8444-99.3.200)
31. **Nitta, J. H.** and M. J. Epps (2009). "Hemi-epiphytism in *Vandenboschia collariata* (Hymenophyllaceae)". In: *Brittonia* 61.4, pp. 392-397. DOI: [10.1007/s12228-009-9097-5](https://doi.org/10.1007/s12228-009-9097-5)
32. **Nitta, J. H.** (2008). "Exploring the utility of three plastid loci for biocoding the filmy ferns (Hymenophyllaceae) of Moorea". In: *Taxon* 57.3, pp. 725-736. DOI: [10.1002/tax.573006](https://doi.org/10.1002/tax.573006)
33. **Nitta, J. H.** and P. O'grady (2008). "Mitochondrial phylogeny of the endemic Hawaiian craneflies (Diptera, Limoniidae, *Dicranomyia*): Implications for biogeography and species formation". In: *Molecular Phylogenetics and Evolution* 46.3, pp. 1182-1190. DOI: [10.1016/j.ympev.2007.12.021](https://doi.org/10.1016/j.ympev.2007.12.021)

Community Activity

VOLUNTEER ROLES

Journal of Plant Research

Editorial Board Member

2020 - present

Phytokeys

Subject Editor

2022 - present

Phytotaxa

Subject Editor

2017 - 2023

Software Carpentry Japan

Team Member

2018 - present

SOCIETIES

American Fern Society, Botanical Society of Japan, Japanese Society for Plant Systematics

JOURNALS REVIEWED

Acta Botanica Gallica, American Fern Journal, American Journal of Botany, Annals of Botany, AoB PLANTS, Australian Systematic Botany, Biology Letters, Botanical Journal of the Linnean Society, Botany Letters, Brittonia, Ecology and Evolution, Journal of Ecology, Journal of Plant Research, Molecular Phylogenetics and Phylogeny, New Phytologist, Plant Species Biology, Phytotaxa, PLoS ONE, Taxon