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 — *Chiba, Japan*
Graduate School of Global and Transdisciplinary Studies, Chiba University — *Apr. 2023 - present*

Project Research Associate — *Tokyo, Japan*
Department of Integrated Biosciences, The University of Tokyo — *Apr. 2020 - Mar. 2023*

Peter Buck Postdoctoral Research Fellow — *Washington, DC*
Department of Botany, National Museum of Natural History, Smithsonian Institution — *Jan. 2019 - Mar. 2020*

Japan Society for the Promotion of Science Postdoctoral Research Fellow — *Tsukuba, Japan*
Department of Botany, National Museum of Nature and Science — *Nov. 2016 - Dec. 2018*

Education

PhD, Organismic and Evolutionary Biology — *Cambridge, MA*
Harvard University — *Nov. 2016*

MS, Biological Sciences — *Tokyo, Japan*
University of Tokyo — *Mar. 2010*

BA, Integrative Biology and Japanese Language — *Berkeley, CA*
University of California, Berkeley — *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) — *Tokyo, Japan*
Evolutionary origins of endemic ferns on an island biodiversity hotspot — *2022 - 2026*

- $31,000 (PI)

Smithsonian Institution Barcode Initiative — *Washington, DC*
Biogeography of Polynesian Pteridophytes: Insights from DNA barcoding — *2019*

- $8,000 (Internal grant)

Japan Society for the Promotion of Science (Grant-in-Aid for JSPS Fellows) — *Tsukuba, Japan*
Elucidating the evolutionary history of a polyploid fern species complex using next-generation sequencing — *2016 - 2019*

- $21,000 (Co-PI)

National Science Foundation Doctoral Dissertation Improvement Grant — *Cambridge, MA*
Investigating the role of a cryptic life stage in fern evolution and community assembly — *2013 - 2015*

- $21,970 (Co-PI)

Awards

Intelligent Systems for Molecular Biology EvolCompGen COSI — *Madison, WI (online)*
Best Talk — *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`**
  - *Categorial 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 `gnparser` 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
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
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
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
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
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
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
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
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
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
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
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
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

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
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
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
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
19. **Nitta, J. H.**, S. Amer, and C. C. Davis (2018). "*Microsorum* × *tohieaense* (Polypodiaceae), a new hybrid fern from French Polynesia, with implications for the taxonomy of *Microsorum*". In: *Systematic Botany* 43.2, pp. 397-413. DOI: 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
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
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
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
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
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
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
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
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
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
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
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
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

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*