

Joel H. Nitta

Graduate School of Global and Transdisciplinary Studies, Chiba University, Chiba, Japan

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

Employment

Graduate School of Global and Transdisciplinary Studies, Chiba University Associate Professor	Chiba, Japan Apr. 2023 – present
Department of Integrated Biosciences, The University of Tokyo Project Research Associate	Tokyo, Japan Apr. 2020 – Mar. 2023
Department of Botany, National Museum of Natural History, Smithsonian Institution Peter Buck Postdoctoral Research Fellow	Washington, DC Jan. 2019 – Mar. 2020
Department of Botany, National Museum of Nature and Science Japan Society for the Promotion of Science Postdoctoral Research Fellow	Tsukuba, Japan Nov. 2016 - Dec. 2018

Education

Harvard University <i>PhD, Organismic and Evolutionary Biology</i>	Cambridge, MA Nov. 2016
University of Tokyo <i>MS, Biological Sciences</i>	Tokyo, Japan Mar. 2010
University of California, Berkeley <i>BA, Integrative Biology and Japanese Language</i> <ul style="list-style-type: none">• Highest Honors in Integrative Biology• Highest Distinction in General Scholarship	Berkeley, CA May 2007

Grants

Evolutionary origins of endemic ferns on an island biodiversity hotspot Japan Society for the Promotion of Science (Grant-in-Aid for Early-Career Scientists) \$31,000 (PI)	Tokyo, Japan 2022 – 2026
Biogeography of Polynesian Pteridophytes: Insights from DNA barcoding Smithsonian Institution Barcode Initiative \$8,000 (Internal grant)	Washington, DC 2019
Elucidating the evolutionary history of a polyploid fern species complex using next-generation sequencing Japan Society for the Promotion of Science (Grant-in-Aid for JSPS Fellows) \$21,000 (Co-PI)	Tsukuba, Japan 2016 – 2019
Investigating the role of a cryptic life stage in fern evolution and community assembly National Science Foundation Doctoral Dissertation Improvement Grant \$21,970 (Co-PI)	Cambridge, MA 2013 – 2015

Honors

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

Teaching

UNDERGRADUATE

Biodiversity and Japan College of Liberal Arts and Sciences, Chiba University	Chiba, Japan 2023 Spring
Reproducible Data Analysis College of Liberal Arts and Sciences, Chiba University	Chiba, Japan 2023 Summer

Workshops

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

Invited Talks

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

Tsukuba, Japan

Tsukuba Botanical Garden Special Fern Exhibit

2023

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

Calicut, India (online)

XVI Conference of the Indian Fern Society and International Symposium

2022

Phylogenetic systematics and community assembly processes in ferns*

Online

21st Annual Meeting of the Japanese Society for Plant Systematics

2022

Young Scientist Award Lecture

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

Noda, Japan

2017

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

**in Japanese*

Publications

Nitta, J. H. (2023). Ferns as a model system for evolutionary biology. *The Journal of Phytogeography and Taxonomy*, 71(2), 115–126. <https://doi.org/10.18942/chiribunrui.0712-03>

Song, M. J., Rothfels, C. J., Schuettzel, E., **Nitta, J. H.** Huiet, L., Li, F.-W., & Wefferling, K. M. (2023). Resolving deep relationships and revealing ancient whole-genome duplications in Pteridaceae using transcriptomic data. *American Fern Journal*, 113(3). <https://doi.org/10.1640/0002-8444-113.3.191>

Nitta, J. H. Laffan, S. W., Mishler, B. D., & Iwasaki, W. (2023). canaper: Categorical analysis of neo- and paleo-endemism in R. *Ecography*, eo6638. <https://doi.org/10.1111/ecog.06638>

Nitta, J. H. (2023). 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)”. *Annals of Botany*, 131(5), i–ii. <https://doi.org/10.1093/aob/mcad024>

Chen, C., Lindsay, S., **Nitta, J. H.** Rouhan, G., Sundue, M., Perrie, L. R., Huang, Y., Chiou, W., & Chung, K. (2023). Systematics and biogeography of the Old World fern genus *Antrophyum*. *Cladistics*, cla.12538. <https://doi.org/10.1111/cla.12538>

Nitta, J. H. Schuettzel, E., Ramírez-Barahona, S., & Iwasaki, W. (2022). An open and continuously updated fern tree of life. *Frontiers in Plant Science*, 13, 909768. <https://doi.org/10.3389/fpls.2022.909768>

Nitta, J. H. Mishler, B. D., Iwasaki, W., & Ebihara, A. (2022). Spatial phylogenetics of Japanese ferns: Patterns, processes, and implications for conservation. *American Journal of Botany*, 109(5), 727–745. <https://doi.org/10.1002/ajb2.1848>

- Nitta, J. H.** & Chambers, S. M. (2022). Identifying cryptic fern gametophytes using DNA barcoding: A review. *Applications in Plant Sciences*, 10, e11465. <https://doi.org/10.1002/aps3.11465>
- Nitta, J. H.** Watkins Jr., J. E., Holbrook, N. M., Wang, T. W., & Davis, C. C. (2021). Ecophysiological differentiation between life stages in filmy ferns (Hymenophyllaceae). *Journal of Plant Research*, 134(5), 971–988. <https://doi.org/10.1007/s10265-021-01318-z>
- Nitta, J. H.** Ebihara, A., & Smith, A. R. (2020). A taxonomic and molecular survey of the pteridophytes of the Nectandra Cloud Forest Reserve, Costa Rica. *PLoS ONE*, 15(11), e0241231. <https://doi.org/10.1371/journal.pone.0241231>
- Nitta, J. H.** Watkins Jr., J. E., & Davis, C. C. (2020). Life in the canopy: Community trait assessments reveal substantial functional diversity among fern epiphytes. *New Phytologist*, 227(6), 1885–1899. <https://doi.org/10.1111/nph.16607>
- Nitta, J. H.** & Ebihara, A. (2019). Virtual issue: Ecology and evolution of pteridophytes in the era of molecular genetics. *Journal of Plant Research*, 132(6), 719–721. <https://doi.org/10.1007/s10265-019-01139-1>
- Ebihara, A., & **Nitta, J. H.** (2019). An update and reassessment of fern and lycophyte diversity data in the Japanese Archipelago. *Journal of Plant Research*, 132(6), 723–738. <https://doi.org/10.1007/s10265-019-01137-3>
- Ebihara, A., **Nitta, J. H.** Matsumoto, Y., Fukazawa, Y., Kurihara, M., Yokote, H., Sakuma, K., Azakami, O., Hirayama, Y., & Imaichi, R. (2019). Growth dynamics of independent gametophytes of *Pleurosoriopsis makinoi* (Polypodiaceae). *Bulletin of the National Museum of Nature and Science, Series B (Botany)*, 45(2), 77–86.
- Nitta, J. H.** Amer, S., & Davis, C. C. (2018). *Microsorium* × *tobiaeense* (Polypodiaceae), a new hybrid fern from French Polynesia, with implications for the taxonomy of *Microsorium*. *Systematic Botany*, 43(2), 397–413. <https://doi.org/10.1600/036364418X697166>
- Gilbert, K. J., **Nitta, J. H.** Talavera, G., & Pierce, N. E. (2018). Keeping an eye on coloration: Ecological correlates of the evolution of pitcher traits in the genus *Nepenthes* (Caryophyllales). *Biological Journal of the Linnean Society*, 123(2), 321–337. <https://doi.org/10.1093/biolinnean/blx142>
- Zhou, X.-M., Zhang, L., Chen, C.-W., Li, C.-X., Huang, Y.-M., Chen, D.-K., Thi, N. T., Cicuzza, D., Knapp, R., Tam, T. T., **Nitta, J. H.** Gao, X.-F., & Zhang, L.-B. (2017). A plastid phylogeny and character evolution of the Old World fern genus *Pyrrosia* (Polypodiaceae) with the description of a new genus: *Hovenkampia* (Polypodiaceae). *Molecular Phylogenetics and Evolution*, 114, 271–294. <https://doi.org/10.1016/j.ympev.2017.06.020>
- Nitta, J. H.** Meyer, J.-Y., Taputuarai, R., & Davis, C. C. (2017). Life cycle matters: DNA barcoding reveals contrasting community structure between fern sporophytes and gametophytes. *Ecological Monographs*, 87(2), 278–296. <https://doi.org/10.1002/ecm.1246>
- Pinson, J. B., Chambers, S. M., **Nitta, J. H.** Kuo, L.-Y., & Sessa, E. B. (2017). The separation of generations: Biology and biogeography of long-lived sporophyteless fern gametophytes. *International Journal of Plant Sciences*, 178(1), 1–18. <https://doi.org/10.1086/688773>
- Pouveau, R., Meyer, J.-Y., Blanchard, P., **Nitta, J. H.** Terorotua, M., & Taputuarai, R. (2016). Fern species richness and abundance are indicators of climate change on high-elevation islands: evidence from an elevational gradient on Tahiti (French Polynesia). *Climatic Change*, 138, 143–156. <https://doi.org/10.1007/s10584-016-1734-x>
- Chen, C.-W., **Nitta, J. H.** Fanerii, M., Yang, T. Y. A., Pitisopa, F., Li, C. W., & Chiou, W.-L. (2015). *Antrophyum solomonense* (Pteridaceae), a new species from the Solomon Islands, and its systematic position based on phylogenetic analysis. *Systematic Botany*, 40(3), 645–651. <https://doi.org/10.1600/036364415X689357>
- Ebihara, A., Yamaoka, A., Mizukami, N., Sakoda, A., **Nitta, J. H.** & Imaichi, R. (2013). A survey of the fern gametophyte flora of Japan: Frequent independent occurrences of noncordiform gametophytes. *American Journal of Botany*, 100(4), 735–743. <https://doi.org/10.3732/ajb.1200555>
- Nitta, J. H.** Ebihara, A., & Ito, M. (2011). Reticulate evolution in the *Crepidomanes minutum* species complex (Hymenophyllaceae). *American Journal of Botany*, 98(11), 1782–1800. <https://doi.org/10.3732/ajb.1000484>
- Nitta, J. H.** Meyer, J.-Y., & Smith, A. R. (2011). Pteridophytes of Mo'orea, French Polynesia: Additional new records. *American Fern Journal*, 101(1), 36–49. <https://doi.org/10.1640/0002-8444-101.1.36>
- Ebihara, A., **Nitta, J. H.** & Ito, M. (2010). Molecular species identification with rich floristic sampling: DNA

- barcoding the pteridophyte flora of Japan. *PLoS ONE*, 5(12), e15136. <https://doi.org/10.1371/journal.pone.0015136>
- Ebihara, A., **Nitta, J. H.** & Iwatsuki, K. (2010). The Hymenophyllaceae of the Pacific area. 2. *Hymenophyllum* (excluding subgen. *Hymenophyllum*). *Bulletin of the National Museum of Nature and Science, Series B (Botany)*, 36(2), 43–59. https://www.kahaku.go.jp/research/publication/botany/download/36_2/BNMNS_B360203.pdf
- Nitta, J. H.** & Epps, M. J. (2009). Hemi-epiphytism in *Vandenboschia collariata* (Hymenophyllaceae). *Brittonia*, 61(4), 392–397. <https://doi.org/10.1007/s12228-009-9097-5>
- Ebihara, A., **Nitta, J. H.** Lorence, D., & Dubuisson, J.-Y. (2009). New records of *Polyphlebium borbonicum*, an African filmy fern, in the New World and Polynesia. *American Fern Journal*, 99(3), 200–206. <https://doi.org/10.1640/0002-8444-99.3.200>
- Nitta, J. H.** (2008). Exploring the utility of three plastid loci for biocoding the filmy ferns (Hymenophyllaceae) of Moorea. *Taxon*, 57(3), 725–736. <https://doi.org/10.1002/tax.573006>
- Nitta, J. H.** & O’grady, P. (2008). Mitochondrial phylogeny of the endemic Hawaiian craneflies (Diptera, Limoniidae, *Dicranomyia*): Implications for biogeography and species formation. *Molecular Phylogenetics and Evolution*, 46(3), 1182–1190. <https://doi.org/10.1016/j.ympev.2007.12.021>

Community Activity

VOLUNTEER ROLES

Editorial Board Member <i>Journal of Plant Research</i>	2020 – present
Subject Editor <i>Phytokeys</i>	2022 – present
Subject Editor <i>Phytotaxa</i>	2017 – 2023
Team Member <i>Software Carpentry Japanese translation team</i>	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