International Symposium on

"Island Plants-Evolution and Conservation"

and

The 48th Annual Meeting

for the Korean Society of Plant Taxonomists

INTERNATIONAL SYMPOSIUM on

"Island Plants – Evolution and Conservation"

Sungkyunkwan University (SKKU), Samsung Library Auditorium (1B),

(February 8, Wednesday, 2017)

12:00-13:00	Registration
13:00-13:15	Opening, welcome, and announcements (Symposium Organizing Chair; President of the Korean Society of Plant Taxonomists; Dean of the College of Natural Sciences, SKKU; Director of the Research Institute of Ulleung-do & Dok-do Islands, Kyungpook National University)

Seccsion I: Moderator (Hyosig Won; Daegu University, Korea)

13:15-13:45	Anagenetic speciation in plants of oceanic islands **Tod Stuessy** (Ohio State University, USA)
13:45-14:15	Oceanic plant lineages as systems for studying speciation: overview and examples from Macaronesian *Tolpis* (Asteraceae) **Daniel Crawford** (University of Kansas, USA)
14:15-14:45	Distributional, morphological and genetic consequences of ecological adaptation to the inland habitat of oceanic islands in a coastal plant, *Hibiscus tiliaceus* (Malvaceae) **Koji Takayama** (Museum of Natural and Environmental History, Shizuoka, Japan)
14:45-15:05	Phylogeny and evolution of endemic species on Ulleungdo Island, Korea: cases of *Fagus multinervis* (Fagaceae) and *Spiraea insularis* (Rosaceae) **Sang-Hun Oh** (Daejeon University, Korea)

15:05-15:25	Refreshment Break (Free Community Zone & Cafe, 5thfloor)

Session II: Moderator (Hye-Kyoung Moon; Kyung Hee University, Korea)

15:25-15:55	The discovery of oceanic island floras **Mark Carine** (Museum of Natural History, London, United Kingdom)
15:55-16:25	The vascular flora and long-term monitoring of Dok-do Island, South Korea/Genetic consequences and anagenetic speciation in *Rubus takesimensis* (Rosaceae) on Ulleung Island, Korea **Woong Lee/Ji Young Yang** (Research Institute for Ulleung-do and Dok-do Islands, Kyungpook National University, Korea)
15:25-16:55	Island ontogeny and the origins of genetic diversity in the Canarian flora **Juli Caujapé Castells** (Jardin Botanico Canario "Viera y Clavijo"- Unidad Asociada al CSIC, Canary Islands, Gran Canaria, Spain)

16:55-17:10	Refreshment Break (Free Community Zone & Cafe, 5thfloor)

Session III: Moderator (Hyeok-Jae Choi; Changwon National University, Korea)

17:10-17:40 Genetic patterns of anagenesis and cladogenesis: a case study from the Juan Fernández Archipelago, Chile

Patricio Gerardo López Sepúlveda (Universidad de Concepción, Chile)

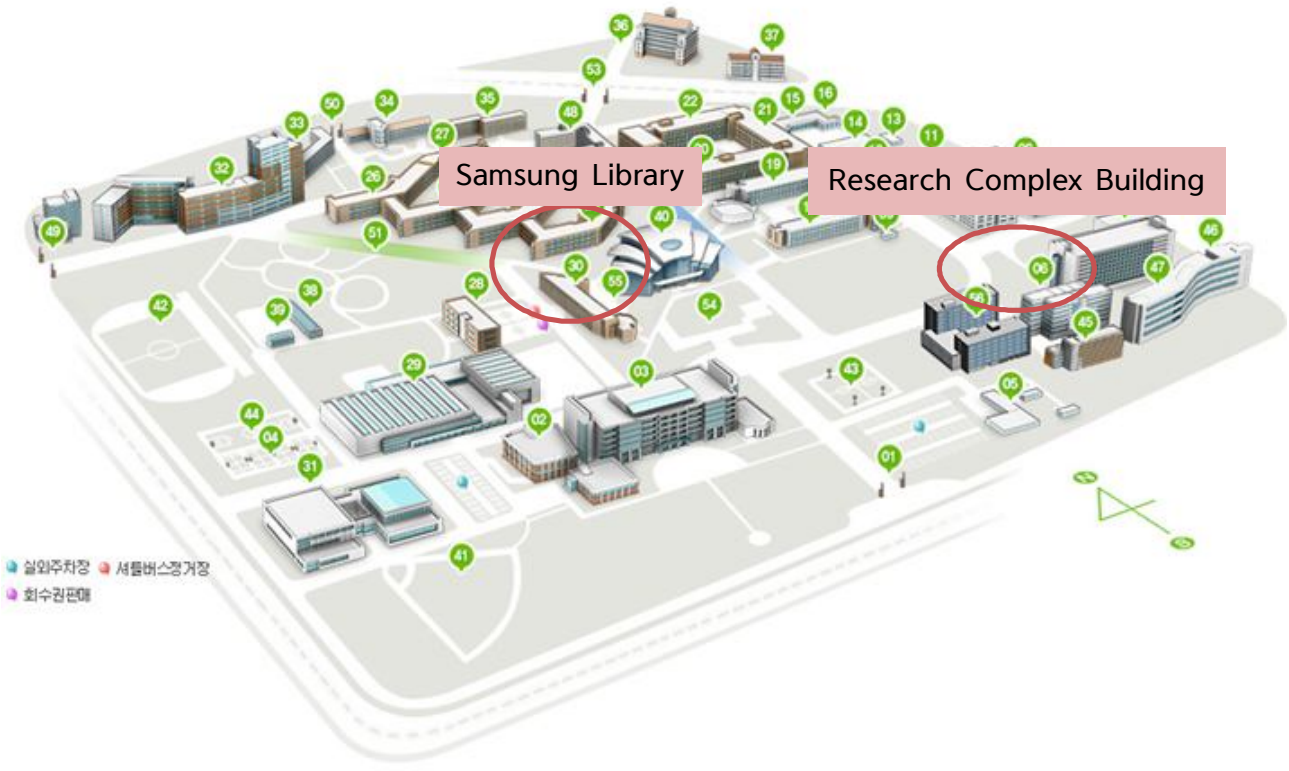
17:40-18:10 Conservation genetics with information from NGS in the Bonin Islands, a UNESCO World Natural Heritage site

Yuji Isagi (Kyoto University, Japan)

18:10-18:30 Origin and evolution of insular plant endemics in Korea: case studies of flowering cherries and Ulleungdo figwort

Seung-Chul Kim (Sungkyunkwan University, Korea)

18:30- Welcome reception (Research Complex Building 1, 8thfloor, 81801)



Dr. Tod F. Stuessy

Ohio State University, USA
(stuessy.1@osu.edu)

EDUCATION

1965 B.A. (cum laude), DePauw University, Greencastle, Indiana (Botany, Geology).

1968 Ph.D., University of Texas at Austin (Botany, Biochemistry).

1971-72 Postdoctoral Research, Harvard University (Plant Systematics).

EXPERIENCE

1962	Field Museum of Natural History, Herbarium Assistant (Summer).
1963–65	DePauw University, General Botany Laboratory Assistant.
1965–66	University of Texas at Austin, General Biology Teaching Assistant.
1969	University of Texas at Austin, Visiting Assistant Professor (Summer).
1968–74	Ohio State University, Assistant Professor (leave of absence, 1971–72).
1974–79	Ohio State University, Associate Professor.
1977–78	Associate Director, Systematic Biology Program, U.S. Nat. Science Foundation
1979-95	Ohio State University, Professor.
1980–95	Ohio State University, Director of the Herbarium.
1982	University of Michigan, Visiting Research Scholar (Fall).
1986, 88	Universidad de Concepcion, Concepcion, Chile, Visiting Lecturer (Summers).
1986	Academia Sinica (P.R.C.), Visiting Research Scholar (October).
1988-89	Ohio State University, Chairman, Department of Botany.
1991-94	Ohio State University, Director, Museum of Biological Diversity
1995-present	Emeritus Professor, Ohio State University.
1995-97	Deputy Director, Research and Collections, Los Angeles Nat. History Museum.
1996-97	Adjunct Professor, Dept. Biol. Sci., Univ. of Southern California, Los Angeles.
1997-2012	Ordentliche Professor, Head of Department of Systematic and Evolutionary Botany, University of Vienna, Austria.
1997-2006	Director, Botanical Garden, University of Vienna, Austria.
2012-present	Emeritus Professor, University of Vienna.

FIELD WORK

Canada 1971, 1972. Western United States 1969, 1971, 1973, 1975. Mexico 1965, 1966, 1967, 1968, 1969, 1973, 1974, 1976, 1980, 2005, 2012. Hawaii 1981. Central America: Guatemala 1966, 1976; Honduras, 1966, 1976; El Salvador 1966, 1976; Nicaragua 1966, 1976; Costa Rica 1976; Panama 1976. South America: Bolivia 2003; Chile 1977, 1979, 1980, 1984, 1985, 1986, 1988, 1990, 1991, 1993, 1996, 1997, 1998, 1999, 2000, 2002, 2007, 2009, 2010, 2011; Ecuador 1977, 1979, 1991, 2003; Colombia 1979; Peru 1992; Venezuela 1981; Argentina 1984, 1987, 1993, 2002; Uruguay 1993. Asia: Korea 1999, 2001; Japan, 2002. Europe: Spain 2002. Africa: Morocco 2003.

FELLOWSHIPS AND TRAINEESHIPS

1966-68 University of Texas at Austin, NSF Environmental and Systematic Biology Traineeship.

1971-72 Harvard University, Maria Moors Cabot Foundation Postdoctoral Fellowship.

SCIENTIFIC SOCIETIES

- American Association for the Advancement of Science.
- American Society of Plant Taxonomists. Institutional Subscriptions Committee, Chairman, 1976; elected as Council member, 1977–78, 1981–84; Book Review Editor, *Systematic Botany*, 1978–1981; representative to ASC, 1982, 1983, 1984, 1985, 1986; Committee on Sys-tematics Collec-tions, Chairman, 1983–86; President-elect, 1986; President, 1987; Past President, 1988; Finance Committee Chairman, 1988; Nominations Committee Chairman, 1988; Local representative for AIBS Columbus meetings, 1987.
- Association of Systematics Collections. Council for Systematic and Evolutionary Biology, Chairman, 1981–84; Nominations Committee, 1983–84; Awards Committee, 1983–84; Council on Systematics and Society, 1986; OSU institutional representative, 1991, 1992, 1993.
- Botanical Society of America. Phytochemical Section—Editorial Representative to the American Journal of Botany, 1972 and 1973; New York Botanical Garden Award Committee, 1975; Systematics Section—Editorial Representative to the *American Journal of Botany*, 1982–85; Nomenclatural reviewer for editorial board, 1976–78; Financial Advisory Committee, 1988-89; Chair, Committee for Selection of Business Manager, 1992.
- International Association for Plant Taxonomy. Secretary-General, 1999-2011, Editor-in-Chief, *Taxon* (1999-2005), Editor-in-Chief, *Regnum Vegetabile* (1999-2011).
- International Organization for Systematic and Evolutionary Biology. President 2008.
- Japanese Botanical Society.
- Korean Society for Plant Taxonomy.
- Linnean Society of London, Fellow.
- Ohio Academy of Science; Vice President for Plant Sciences Section, 1990-91; Plant Sciences Membership Chairman, 1991-92; Executive Committee, 1991-93; Nominations Committee, 1991-92; Fellowship Committee 1991-94.
- Society of Systematic Biology.
- Systematics Association.

HONORS AND AWARDS

- Wilks Award for one of two best student papers, Southwestern Assoc. Naturalists, Lake Texoma, Oklahoma, 1968.

- Outstanding Faculty Award, Office of International Affairs, The Ohio State University, 1994.
- Fellow: Ohio Academy of Sciences, 1977; American Association for the Advancement of Science, 1987; Linnean Society of London, 1988.
- Gleason Award for book *Plant Taxonomy*, 1990.
- Asa Gray Award, American Society of Plant Taxonomists, 1999.
- Merit Award, Botanical Society of America, 1999.
- Corresponding Member, Austrian Academy of Sciences, 1999.
- Centennial Award, Botanical Society of America, 2006.
- Stebbins Medal (with V. Funk, A. Susanna, and R. Bayer), Intern. Assoc. Pl. Taxonomy, 2009.
- Engler Medal in Gold, International Association for Plant Taxonomy, 2011.

RECENT PUBLICATIONS

Books:

1984 *Cladistics: Perspectives on the Reconstruction of Evolutionary History*. Columbia Univ. Press, N.Y. (edited with T. Duncan).

1985 *Cladistic Theory and Methodology*. Dowden, Hutchinson and Ross, Philadelphia. (edited with T. Duncan).

1990 *Plant Taxonomy: The Systematic Evaluation of Comparative Data*. Columbia Univ. Press, N.Y. (Received Gleason Award for 1990).

1994 *Case studies in Plant Taxonomy: Exercises in Applied Pattern Recognition*. Columbia Univ. Press, N.Y.

1996 *Sampling the Green World: Innovative Concepts of Collection, Preservation, and Storage of Plant Diversity*. Columbia Univ. Press: New York. (edited with S. Sohmer)

1998 *Evolution and Speciation of Island Plants*. Cambridge Univ. Press, Cambridge. (edited with M. Ono).

2001 *Flavonoids of the Sunflower Family (Asteraceae)*. Springer-Verlag, Vienna. (with B. Bohm).

2001 *Plant Systematics: A Half-Century of Progress (1950-2000) and Future Challenges*. IAPT, Vienna. (edited with E Hoerandl and V. Mayer).

2003 *Deep Morphology: Toward a Renaissance of Morphology in Plant Syste*matics. Gantner, Liechtenstein. (edited with V. Mayer and E. Hoerandl).

2009 *Plant Taxonomy: The Systematic Evaluation of Comparative Data*, ed. 2. Columbia Univ. Press, N.Y.

2009 *Systematics, Evolution, and Biogeography of Compositae*. IAPT Press, Vienna. (edited with V. Funk, A. Susanna and R. Bayer) (received Stebbins Medal 2009)

2011 *Monographic Plant Systematics: Fundamental Assessment of Plant Biodiversity*. Gantner, Liechtenstein. (edited with H. Walter Lack)

2014 *Plant Systematics: The Origin, Interpretation, and Ordering of Plant Biodiversity.* Gantner, Liechtenstein. (with D. Crawford, D. Soltis, and P. Soltis)

Papers (since 2005; more than 290 total):

2005a Pleistocene refugia and recolonization routes in the southern Andes: insights from *Hypochaeris palustris* (Asteraceae, Lactuceae). Mol. Ecol. 14: 203-212. (with A. N. Muellner, K. Tremetsberger and C. M. Baeza).

2005b Phylogenetic relationships in subfamily Tillandsioideae (Bromeliaceae) based on DNA sequence data from seven plastid regions. Amer. J. Bot. 92: 337-351. (with M. H. J. Barfuss, R. Samuel and W. Till).

2005c Taxonomy and cytogeography of *Cardamine raphanifolia* and *C. gallaecica* (Brassicaceae) in the Iberian Peninsula. Pl. Syst. Evol. 254: 69-91. (with M. Perny, A. Tribsch and K. Marhold)

2005d Making the first step: practical considerations for the isolation of low-copy nuclear sequence markers. Taxon 54: 766-770. (with P. Schlüter and H. Paulus).

2005e Inventorying the flora of the world: status, needs and prospects. Introduction In: I. Hedberg (ed.), *Species Plantarum: 250 Years*. Symbol. Bot. Upsalensis. 33: 153-158.

2005f Landscape modification and impact on specific and genetic diversity in oceanic islands. Pp. 89-101 in: H. Balslev and I. Friis (eds.), *Plant Diversity and Complexity Patterns: Local, Regional and Global Dimensions*. Danish Acad. Sci., Copenhagen. (Biol. Skr. 55; with J. Greimler and T. Dirnböck).

2005g Nuclear ribosomal DNA and karyotypes indicate a NW African origin of South American *Hypochaeris* (Asteraceae, Cichorieae). Mol. Phylogenet. Evol. 35: 102-116. (with K. Tremetsberger, H. Weiss-Schneeweiss, R. Samuel, G. Kadlec, M. A. Ortiz and S. Talavera).

2005h Allopolyploid origin of *Cardamine silana* (Brassicaceae) from Calabria (southern Italy): karyological, morphological and molecular evidence. Bot. J. Linn. Soc. 148: 101-116. (with M. Perny, A. Tribsch, and K. Marhold)

2005i Testing degrees of genetic divergence and populational variation in oceanic island archipelagos: Juan Fernandez as a model system. Nova Acta Leopoldina 92: 147-165. (with E. Ruiz, K. Tremetsberger, D. Crawford).

2005j Challenges facing plant systematics: Are we up to the task? Pp. 17-29 in: Pandey, A., Wen, J. and Dogra, J. V. V. (eds.), *Plant Taxonomy: Advances and Relevance*. CBS Publ., New Delhi.

2005k International Symposium on Plant Taxonomy: Advances and Relevance—Presiding Remarks. Pp. 1-4 in: Pandey, A., Wen, J. and Dogra, J. V. V. (eds.), *Plant Taxonomy: Advances and Relevance*. CBS Publ., New Delhi.

2005l XVII International Botanical Congress: preliminary mail vote and report of Congress action on nomenclature proposals. Taxon 54:1057-1064. (with J. McNeill, N. J. Turland and E. Hörandl).

2005m Evolution of *Dystaenia takesimana* (Apiaceae) endemic to Ullung Island, Korea. Pl. Syst. Evol. 256:159-170. (with M. Pfosser, G. Jakubowsky, P. Schlüter, T. Fer, H. Kato, B-Y. Sun).

2006a Self-compatibility and floral parameters in *Hypochaeris* sect. *Hypochaeris* (Asteraceae). Amer. J. Bot. 93:234-244. (with M. A. Ortiz, S. Talavera, J. L. Garcia-Castano, K. Tremetsberger, F. Balao, R. Casimiro-Soriguer).

2006b Principles and practice of plant taxonomy. Pp. 31-44 in: S. Jury and E. Leadlay (eds.), Taxonomy and Plant Conservation: The Cornerstone of the Conservation and the Sustainable Use of Plants. Cambridge Univ. Press, Cambridge.

2006c Cytogenetic studies in populations of *Hypochaeris apargioides* Hook. et Arn. (Asteraceae, Lactuceae) from Chile. Gayana Bot. 63: 99-105. (with C. Baeza and S. Jara).

2006d Phylogenetics of tribe Phyllantheae (Phyllanthaceae; Euphorbiaceae sensu lato) based on nrITS and plastid *mat*K DNA sequence data. Amer. J. Bot. 93: 637-655. (with H. Kathriarachchi, R. Samuel, P. Hoffmann, J. Mlinarec, K. J. Wurdack, H. Ralimanana and M.S. Chase).

2006e The role of hybridization, polyploidization and glaciation in the origin and evolution of the apomictic *Ranunculus cassubicus* complex. New Phytol. 171: 223-236. (with O. Paun and E. Hörandl).

2006f Molecular phylogenetics reveals *Leontodon* (Asteraceae, Lactuceae) to be diphyletic. Amer. J. Bot. 93: 1193-1205. (with R. Samuel, W. Gutermann, C.F. Ruas, H.-W.

Lack, K. Tremetsberger, S. Talavera, B. Hermanowski and F. Ehrendorfer).

2006g Phylogenetics of Quiinaceae (Malpighiales): evidence from *trn*L-*trn*F sequence data and morphology. Pl. Syst. Evol. 257: 189-203. (with J.V. Schneider, U. Swenson, R. Samuel and G. Zizka).

2006h Anagenetic evolution in island plants. J. Biogeogr. 33: 1259-1265. (with G. Jakubowsky, R. Salguero Gomez, M. Pfosser, P. M. Schlüter, T. Fer, B.-Y. Sun, and H. Kato).

2006i Phylogenetic implications of corolla morphology in subfamily Barnadesioideae (Asteraceae). Flora 201: 340-352. (with E. Urtubey).

2006j AFLP phylogeny of South American species of *Hypochaeris* (Asteraceae, Lactuceae). Syst. Bot. 31: 610-626. (with K. Tremetsberger, G. Kadlec, E. Urtubey, C.M. Baeza, S.G. Beck, H.A. Valdebenito, C.F. Ruas and N.I. Matzenbacher).

2006k The angiosperm flora of the Archipelago Juan Fernandez (Chile): origin and dispersal. Canad. J. Bot. 84: 1266-1281. (with G. Bernardello, G. Anderson, and D. Crawford).

2006l Genetic diversity and population structure in natural populations of Moroccan Atlas cedar (*Cedrus atlantica*; Pinaceae) determined with cpSSR markers. Amer. J. Bot. 93: 1274-1280. (with A. Terrab, O. Paun, K. Tremetsberger, S. Talavera and M. Arista).

2006m Sympatric plant speciation in islands? Nature (Brief Communications Arising) 443:E12.

2007a Barnadesioideae, pp. 87-90. In: J. Kadereit (ed.), Compositae. *Families and Genera of Vascular Plants* (K. Kubitzki, ed.). Springer-Verlag, Wien. (with E. Urtubey).

2007b Reproductive isolation in the Aegaen *Ophrys omegaifera* complex (Orchidaceae). Pl. Syst. Evol. 267: 105-119. (with P. M. Schlüter, P. M. Ruas, G. Kohl, C. F. Ruas, and H. F. Paulus).

2007c Population structure of *Hypochaeris salzmanniana* DC. (Asteraceae), an Endemic species to the Atlantic coast on both sides of the Strait of Gibraltar, in relation to Quaternary sea level changes. Mol. Ecol. 16: 541-552. (with M.A. Ortiz, K. Tremetsberger, S. Talavera, and J. L. Garcia-Castano).

2007d Genetic diversity at chloroplast microsatellites (cpSSRs) and geographic structure in endangered West Mediterranean firs (*Abies* spp., Pinaceae). Taxon 56: 409-416. (with A. Terrab, S. Talavera, M. Arista, O. Paun and K. Tremetsberger).

2007e A screen of low-copy nuclear genes reveals the LFY gene as phylogenetically informative in closely related species of orchids (*Ophrys*). Taxon 56: 493-504. (with P. Schlüter, G. Kohl, and H. F. Paulus).

2007f Chromosome numbers and karyotypes of South American species and populations of *Hypochaeris* (Asteraceae). Bot. J. Linn. Soc. 153: 49-60. (with H. Weiss-Schneeweiss, K. Tremetsberger, E. Urtubey, H. A. Valdebenito, S. G. Beck and C. M. Baeza).

2007g Recuentos cromosomicos en plantas que crecen en Chile III. Gayana Bot. 64: 175-183 (with M. Baeza, O. Schrader, A. Terrab, M. Rosas, M. Ruiz, M. Negritto and E. Urtubey).

2007h Estudios cromosomicos en especies de *Hypochaeris* L. (Asteraceae, Lactuceae) de Chile. Gayana Bot. 64 : 245-249. (with M. Baeza, C. Cabezas, A. Terrab, E. Ruiz, M. Negritto and E. Urtubey).

2007i Genetic diversity and differentiation within and among Chilean populations of *Araucaria araucana* (Araucariaceae) based on allozyme variability. Taxon 56: 1221-1228 (with E. Ruiz, R. Gonzalez and C. Torres D., G. Fuentes, M. Mardones, R. Samuel, J. Becerra and M. Silva).

2007j Evolution of specific and genetic diversity during ontogeny of island floras: the importance of understanding process for interpreting island biogeographic patterns. Pp. 117-132 in: M. Ebach and R. S. Tangney (eds.), *Biogeography in a Changing World*. CRC Press.

2007k Chromosomal stasis in diploids contrasts with genome restructuring in auto- and allopolyploid taxa of *Hepatica* (Ranunculaceae). New Phytol. 174: 669-682.

2008a Characterization, genomic organization and chromosomal distribution of Tyl-*copia* retrotransposons in species of *Hypochaeris* (Asteraceae). Gene 412: 39-49. (with C. F. Ruas, H. Weiss-Schneeweiss, M. R. Samuel, A. Pedrosa-Harand, K. Tremetsberger, P. M. Ruas, P. M. Schluter, M. A. Ortiz Herrara, C. König and N. I. Matzenbacher).

2008b Scent variation and hybridization cause the displacement of a sexually deceptive orchid species. Amer. J. Bot. 95: 472-481. (with J. Stökl, P. M. Schlüter, H. F. Paulus, G. Assum and M. Ayasse).

2008c Karyotype diversification and evolution in diploid and polyploidy South American *Hypochaeris* (Asteraceae) inferred from rDNA localization and genetic fingerprint data. Ann. Bot. 101: 909-918. (with H. Weiss-Schneeweiss, K. Tremetsberger, G. Schneeweiss and J. Parker).

2008d Genetic races associated with the genera and sections of host species in the holoparasitic plant *Cytinus* (Cytinaceae) in the Western Mediterranean basin. New Phytol. 178: 875-888. (with C. de Vega, R. Berjano, M. Arista, P. L. Ortiz and S. Talavera).

2008e Patrocladistic classification. Taxon 57: 594-601. (with K. König)

2008f Phylogeography of North African Atlas cedar (*Cedrus atlantica*, Pinaceae): Combined molecular and fossil data reveal a complex Quaternary history. Amer. J. Bot. 95: 1262-1269. (with A. Terrab, A. Hampe, O. Lepais, S. Talavera and E. Vela).

2008g Phylogeography of the invasive weed *Hypochaeris radicata* (Asteraceae): from Moroccan origin to worldwide introduced populations. Mol. Ecol. 17: 3654-3667. (with M. A. Ortiz, K. Tremetsberger, A. Terrab, J. L. Garcia-Castaño, E. Urtubey, C. M. Baeza, C. F. Ruas, P. E. Gibbs and S. Talavera).

2008h An evaluation of tribes and generic relationships in Melioideae (Meliaceae) based on nuclear ITS ribosomal DNA. Taxon 57: 98-108. (with A. Muellner, R. Samuel, M. W. Chase and A. Coleman).

2008i Phylogenetic relationships among Chilean species of *Drimys* (Winteraceae) based on ITS sequences and insertion/deletion events. Gayana Bot. 65:220-228. (with E. Ruiz, O. Toro, D. J. Crawford, M. A. Negritto, C. Baeza and J. Becerra).

2009a Molecular phylogenetic analyses of nuclear and plastid DNA sequences support dysploid and polyploidy chromosome number changes and reticulate evolution in the diversification of *Melampodium* (Millerieae, Asteraceae). Mol. Phylogenet. Evol. 53:220-233. (with C. Blöch, G. M. Schneeweiss, M. H. Barfuss, C. A. Rebernig, and J. L. Villasenor)

2009b Genetic patterns and pollination in *Ophrys iricolor* and *O. misaritica* (Orchidaceae); sympatric evolution by pollinator shift. Bot. J. Linn. Soc. 159: 583-598. (with P. M. Schlüter, P. M. Ruas, G. Kohl and C. F. Ruas).

2009c Breeding system studies indicate vicariance origin for scattered populations and enigmatic low fecundity in the Moroccan endemic *Hypochaeris angustifolia* (Asteraceae), sister taxon to all of the South American *Hypochaeris* species. Mol. Phylogenet. Evol. 53: 13-22. (with A. Terrab, M. A. Ortiz, M. Talavera, M. J. Ariza, M. Del Carmen Moriana, J. L. Garcia-Castano, K. Tremetsberger, C. Marcelo Baeza, E. Urtubey, C. De Fatima Ruas, R. Casimiro-Soriguer, F. Balao, P. E. Gibbs, and Salvador Talavera).

2009d Dear Professor Linnaeus. Pp. 255-257 in: S. Knapp and Q. Wheeler (eds.), *Letters to Linnaeus*. London, The Linnean Society.

2009e Phylogeny of Barnadesioideae (Asteraceae) inferred from DNA sequence data and morphology. Mol. Phylogenet. Evol. 51: 572-586. (with M. Gruenstaeudl, E. Urtubey, R. K. Jansen, R. Samuel, and M. H. J. Barfuss).

2009f Rooting and dating maples (*Acer*) with an uncorrelated-rates molecular clock: Implications for North American/Asian disjunctions. Syst. Biol. 57: 957-986. (with S. Renner, G. Grimm, G. Schneeweiss and R. Ricklefs).

2009g Paradigms in biological classification (1707-2007): Has anything really changed? Taxon 58: 68-76.

2009h Anagenesis. Pp. 8-10 in: R. G. Gillespie and D. A. Clague, eds., *Encylopedia of Islands*. Univ. California Press, Berkeley.

2009i Pleistocene refugia and polytopic replacement of diploids by tetraploids in the Patagonian and Subantarctic plant *Hypochaeris incana* (Asteraceae, Cichorieae). Mol. Ecol. 18: 3668-3682. (with K. Tremetsberger, E. Urtubey, A. Terrab, C. Baeza, A. Ortiz, M. Talavera, C. Koenig, E. Temsch, and S. Talavera)

2009j Introduction to symposium "Concepts of systematic biology from Linnaeus to the present." Taxon 58: 16-17.

2009k Systematics of the South American *Hypochaeris sessiliflora* complex (Asteraceae, Cichorieae). Ann. Missouri Bot. Gard. 96: 685-714. (with E. Urtubey and K. Tremetsberger).

2009l Chromosome numbers, karyotypes, and evolution in *Melampodium* (Asteraceae). Int. J. Plant Sci. 170: 1168-1182. (with H. Weiss-Schneeweiss and J. L. Villasenor).

2009m Phylogeographic patterns in *Hypochaeris* section *Hypochaeris* (Asteraceae, Lactuceae) of the western Mediterranean. J. Biogeogr. 36: 1384-1397. (with M A. Ortiz, K. Tremetsberger, A. Terrab, J. L. Garcia-Castano and S. Talavera).

2009n Speciation in sexually deceptive orchids: pollinator-driven selection maintains discrete odour phenotypes in hybridizing species. Biol. J. Linn. Soc. 98: 439-451. (with Stökl, J., Schlüter, P.M., Paulus, H. F., Fraberger, R., Erdmann, D., Schulz, C., Francke, W., Assum, G. and Ayasse, M.).

2010a Molecular phylogeny of the Edelweiss (*Leontopodium*, Asteraceae—Gnaphalieae). Edinburgh J. Bot. 67: 235-264. (with Blöch, C., Dickore, W. B., and Samuel, R.).

2010b Paraphyletic groups as natural units of biological classification. Taxon 59: 1641-1653. (with E. Hörandl).

2010c Multiple Pleistocene refugia and Holocene range expansion of an abundant southwestern American desert plant species (*Melampodium leucanthum*, Asteraceae). Mol. Ecol. 19: 3421-3443. (with Rebernig, C. A., Schneeweiss, G. M., Bardy, K. E., Schönswetter, P., Villaseñor, J. L., Obermayer, R., and Weiss-Schneeweiss).

2010d Quaternary range dynamics and polyploid evolution in an arid brushland plant species (*Melampodium cinereum*, Asteraceae). Mol. Phylogenet. Evol. 54: 594-606. (with Rebernig, C. A., Weiss-Schneeweiss, H., Schneeweiss, G. M., Schönswetter, P., Obermayer, R., Villaseñor, J. L).

2010e Paraphyly and the origin and classification of angiosperms. Taxon 59: 689-693.

2010f Plant speciation symposium: introduction. Taxon 59: 1324-1325.

2010g The South American Biogeographic Transition Zone: An analysis from Asteraceae. Taxon 59: 505-509. (with Urtubey, E., Stuessy, T. F., Tremetsberger, K. and Morrone, J. J.).

2010h The rise of sunflowers. Science 329: 1605-1606.

2011a Modern plant biosystematics: commemorating 50 years of the International Organization of Plant Biosystematists. Taxon 60: 317-319. (with Marhold, K.).

2011b Phylogeny of *Hepatica* (Ranunculaceae) and origin of *Hepatica maxima* Nakai endemic to Ullung Island, Korea. Stapfia 95: 16-27. (with Pfosser, M., Sun, B.-Y., Jang, C.-G., Guo, Y.-P., Taejin, K., Hwan, K. C., Kato, H. and Sugawara, T.).

2011c Karyotype and AFLP data reveal the phylogenetic position of the Brazilian endemic *Hypochaeris catharinensis* (Asteraceae). Pl. Syst. Evol. 296: 231-143. (with Reck, M., Benicio, L. M., Ruas, E. A., Rodrigues, L. A., Ruas, P.M., Ortiz, M. A., Talavera, S., Urtubey, E., Weiss-Schneeweiss, H., Tremetsberger, K., Michelan, V. S., Matzenbacher, N. I., Vanzela, A. L. L., Terrab, A., Samuel, R., and Ruas, C. F.).

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2013e Phylogenetic relationships among *Myrceugenia*, *Blepharocalyx*, and *Luma* (Myrtaceae) based on paired-sites models and the secondary structures of ITS and

ETS sequences. Pl. Syst. Evol. 299: 713-729. (with Murillo-A., J., and Ruiz, E.).

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2013h New trends in plant systematics—introduction. Taxon *62*: 873-875. (with V. A. Funk).

2013i Interpretation of patterns of genetic variation in endemic plant species of oceanic islands. Bot. J. Linn. Soc. DOI:10.1111/boj.12088 (with Takayama, K., López-Sepulveda, and Crawford, D. J.).

2013j Anagenetic speciation in Ullung Island, Korea: genetic diversity and structure in the island endemic species, *Acer takesimense* (Sapindaceae). J. Pl. Res. 126: 323-333. (with Takayama, K., and Sun, B.-Y.)

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2014b Evolutionary systematics and paraphyly: Introduction. Ann. Missouri Bot. Gard. 100: 2-5. (with Hoerandl, E.).

2014c Paraphyly and endemic genera of oceanic islands: implications for conservation. Ann. Missouri Bot. Gard. 100: 50-78. (with Koenig, C. and Lopez Sepulveda, P.).

2014d Interpretation of patterns of genetic variation in endemic plant species of oceanic islands. Bot. J. Linn. Soc. 174: 276-288. (with Takayama, K., Lopez-Sepulveda, P., and Crawford, D. J.).

2014e Phytomelanin and systematics of the Heliantheae alliance (Compositae). Plant Div. Evol. 131: 145-165. (with Pandey, A. K. and Mathur, R. R.)

2014f Chromosome numbers of the edelweiss, *Leontopodium* (Asteraceae. Compositae—Gnaphalieae). Edinburgh J. Bot. 71: 23-33. (with Stille, J. S., Jaeger, M., Dickore, W. B., Ehlers, K., Holzhauer, S. I. J., Mayland-Quellhorst, E., Safer, S., Schwaiger, S., Stuppner, H. and Wissemann, V.).

2014g Patterns of phylogeography and vicariance of *Chamaerops humilis* L. (Palmae). Turkish J. Bot. 38: 1132-1146. (with Garcia-Castaño, J. L., Terrab, A., Ortiz, M.A., and Talavera, S.).

2014h Progressive migration and anagenesis in *Drimys confertifolia* of Juan Fernandez Archipelago, Chile. J. of Plant Research 128: 73-90. (with Lopez Sepulveda, P., Takayama, K., Greimler, J., Crawford, D. J., Peñailillo, P., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P. and Novak, J.).

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2015b Relationships and genetic consequences of contrasting modes of speciation among endemic species of *Robinsonia* (Asteraceae, Senecioneae) of the Juan Fernandez Archipelago, Chile, based on AFLPs and SSRs. New Phytologist 205: 415-428. (with Takayama, K., Lopez-Sepulveda, P., Greimler, J., Crawford, D. J., Peñailillo, P., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J.).

2015c Speciation and biogeography of *Erigeron* (Asteraceae) endemic to the Juan Fernandez Archipelago, Chile, based on AFLPs and SSRs. Syst. Bot. 40: 888-899. (with Lopez-Sepulveda, P., Takayama, K., Greimler, J., Crawford, D. J., Peñailillo, P., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J.).

Anagenetic speciation in plants of oceanic islands

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Oceanic islands have long been regarded as natural laboratories for the study of patterns and processes of evolution. Conspicuous within the endemic floras of these islands are groups of species that have adaptively radiated in isolation from continental progenitors. Species in these complexes have diverse morphologies and are distributed in different ecological zones. These are the classic textbook examples of island evolution, such as seen with Darwin's finches in the Galapagos, the lobelioids of the Hawaiian archipelago, or *Aeonium* and *Echium* in the Canary Islands. Although speciation by means of adaptive radiation, involving splitting of immigrant lineages (cladogenesis), has been common in oceanic islands, not all species have evolved in this fashion. Some immigrants have dispersed from continental regions and established viable populations in islands, but without formation of adaptive complexes. Over time, these populations may increase in size, maintaining gene flow among subpopulations, and slowly changing via mutation, recombination, genetic drift, and some selection. The result is a large population that has not dispersed and adapted to new ecological zones, but rather has remained in a relatively uniform environment and accumulated genetic variation over time. Sufficient morphological and genetic modification in comparison with the continental progenitor leads to the taxonomic recognition of this new population as a distinct species. This type of progenitor-derivative speciation has been called anagenesis. Surveys of oceanic islands of the world suggest that at least one-fourth of endemic plant species have originated this way. Initial examination of the genetic consequences of anagenesis began with studies on the flora of Ullung Island, Korea, where nearly all of the endemic species have evolved by simple transformational speciation. Subsequent studies have extended to a comparison of the genetic aspects of species originating by cladogenesis and anagenesis in the Juan Fernández Islands. These investigations have revealed that the levels of genetic diversity within anagenetically derived species are often high, at nearly the same level as encountered in progenitor species. In addition, this genetic variation is not partitioned geographically over the island landscape. Within cladogenetically derived species, the genetic diversity within populations is lower, but with strong differentiation among related endemic species. Genetic profiles within endemic island species may change over geological time, requiring care in explaining different levels of genetic diversity between groups on islands of disparate ages.

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EDUCATION

1964 B.A., University of Iowa

1966 M.S., University of Iowa

1969 Ph.D., University of Iowa

PROFESSTIONAL EXPERIENCE (selected)

- Assistant-Associate Professor of Botany, University of Wyoming, 1969-1977
- Visiting Research Professor, University of Texas, Austin, August-December, 1975
- Associate Professor-Professor of Botany (Plant Biology, Evolution, Ecology and Organismal Biology) The Ohio State University, 1977-2000
- Professor Emeritus, 2000-present
- Adjunct Professor, Department of Ecology and Evolutionary Biology; Adjunct Curator, Biodiversity Institute, University of Kansas, 2001-present
- Visiting Research Professor, Universidad de Concepcion, Chile, November-December, 1980; August-September, 1986
- Visiting Professor and C.S.I.R. Fellow, Department of Botany, University of the Witwatersrand, Johannesburg, South Africa, September-December, 1985
- Visiting Scholar, Department of Cellular and Molecular Biology, University of Michigan, Summer Quarter 1985, Winter Quarter, 1986
- Visiting Lecturer, Department of Higher Plant Systematics and Evolution, University of Vienna, March 10-25, 2000

PARTICIPATION IN PROFESSIONAL SOCIETIES, PROFESSIONAL SERVICES, AND PROFESSIONAL AWARDS (selected)

- Member Editorial Board, Madroño (Journal of California Botanical Society), 1976-81.
- Associate Editor, Paleobiology, 1982-84
- President-Elect, (1987), President (1988), Past-President (1989) American Society of Plant Taxonomists
- Editorial Board, Plant Systematics and Evolution, 1990-94
- Advisory Board - Critical Reviews in Plant Sciences, 1991-2009
- President-Elect (1995), President (1996), Past-President (1997) Botanical Society of America.
- Asa Gray Award, American Society of Plant Taxonomists, 1997

- Distinguished Fellow Award, Botanical Society of America, 1999
- Editorial Committee, Argentinian Journal of Botany 2001-
- Editorial Committee, Gayana Botanica, Concepción, Chile 2000-
- Associate Editor, Taxon, 2003-2005
- Associate Editor, Plant Systematics and Evolution, 2009-2011
- Centennial Award, Botanical Society of America, 2006

SYMPOSIA (last 10 years)

- "Biogeography and speciation in the family Lemnaceae: interpreting ecological data within a molecular phylogenetic framework". Symposium entitled Sistematica de Organismos Fotosintetizadores: Enfoques Moleculares Y Citogeneticos" XVII Reunion de la Sociedad de Botanica de Chile. Talca, Chile, 16-20 January, 2006. (With E. Landolt, D. H. Les, and R. T. Kimball)
- "Baker's Rule and the reproductive biology of Asteraceae in oceanic archipelagos" The International Compositae Alliance, Barcelona, Spain, 3-9 July, 2006 (With T. K. Lowrey).
- "Phylogeny of Coreopsideae (Asteraceae): insights from nuclear and plastid sequences". The International Compositae Alliance, Barcelona, Spain, 3-9 July, 2006 (With M. E. Mort, C. P. Randle, R. T. Kimball, and Mesfin Tadesse).
- "Allozymes in flowering plants of the Juan Fernandez Islands, Chile: ecological and historical factors, with comparisons to other archipelagos." Invited presentation at meeting "International Meeting of Experts in Molecular Population Genetic Markers and Biological Databases" Jardín Botánico "Viera Y Clavijo", Las Palmas de Gran Canaria, Canary Islands, Spain, June 2007 (With J. K. Archibald).
- "Genetic variation and breeding systems in Canary Island *Tolpis* (Asteraceae): conservation implications". Work shop "Systematics, populations genetics, and propagation of Azorean endemic plants. University of the Azores, Ponta Delgada. January 28-30, 2008.
- Compositae Workshop, Invited participant, Biodiversity Synthesis Center, Field Museum of Natural History, Chicago, April 14-17, 2010.
- "Progenitor-derivative species pairs and plant speciation." Invited "International Conference : New Frontiers in Plant Systematics and Evolution" July 7-9. 2010. Beijing, China. Organized by Botanical Society of China, Chinese Academy of Sciences and International Association for Plant Taxonomy.
- "Comparative reproductive biology of the Canaries and Pacific archipelagos, especially Juan Fernandez". Invited. International Conferences on Island Biodiversity 2011: Present and emerging knowledge on the evolution, diversity and conservation of the Canarian flora. Jardin Botanico Canario "Viera y Clavijo"- Unidad Asociada CSIC. Las Palmas, Gran Canaria. (With G. J. Anderson, G. Bernardello and A. Santos-Guerra; Presented by D. J. Crawford and G. J. Anderson) March 14-18, 2011.
- "Biogeographical patterns of Pacific *Bidens*. Evolution of Life on Pacific Islands and Reefs: Past, Present and Future". (With V. A. Funk, E. Frew, G. Johnson, M. Knope, M. Bonifacino, F. Ganders, D. Lorence, J-Y Meyer and W. L. Wagner, presented by V. A. Funk) East-West Center, Honolulu, Hawaii. 26-30 May, 2011.
- "Reproductive biology and the evolution of *Tolpis* (Asteraceae: Cichorieae) in the Canary Islands" Invited. Symposium "Plant Systematics and Evolution" Faculty Center Biodiversity, University of Vienna, November 9, 2012.
- "Melding the old and the new: The potential for incorporating genomics into the conservation of island floras, with an example from *Tolpis* Asteraceae) in the Macaronesain archipelagos" (With M. E. Mort and J. K. Kelly). UNESCO Chair Meeting: La Conservación de la Biodiversidad en Macaronesia y el Oeste de África. Jardin Botanico Canario, Gran Canaria, Canary Islands. Nov 27-28, 2013.

- "Enzyme Electrophoresis, and Plant Systematics". A Colloquium Honoring Leslie D. Gottlieb. Botany 2013 Meeting. New Orleans, 27-31 July.
- Mort, M. E., D. J. Crawford and J. K. Kelly. 2015. Rad-seq data resolve phylogeny within a very recently derived insular lineage. FlorMac meeting. Jardin Botanico Canario, Gran Canaria, Canary Islands. 23-27 March.
- Crawford, D. J., D. P. Hauber, L. B. Silva, M. M. Sequeira, M. Moura, A. Santos-Guerra, J. K. Kelly, M. E. Mort, B. Kerbs, J. Ressler & M. J. S. Gibson 2016. Postzygotic isolating barriers, divergence and speciation in Macaronesian *Tolpis* . 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal.
- Crawford, D. J., D. P. Hauber, L. B. Silva, M. M. Sequeira, M. Moura, A. Santos-Guerra, J. K. Kelly, M. J. S. Gibson & M. E. Mort 2016. Breeding and mating systems, and breeding relationships in Macaronesian *Tolpis*: Applications to the conservation of diversity. 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal.
- Mort, M. E., J. K. Archibald, M. J. S. Gibson, H. Bontrager, D. P. Hauber, L. B. Silva, M. M. Sequeira, M. Moura, A. Santos-Guerra, J. K. Kelly, M. Gruenstaeudl, J. Caujapé-Castells & D. J. Crawford 2016. Analyses of Multiplexed-Shotgun-Genotyping (MSG) data reveal cryptic biodiversity in Macaronesian Tolpis . 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal.
- Stuessy, T. F., D. J. Crawford & E. Ruiz 2016. Phylogenetic and biogeographic patterns in the endemic flora of the Juan Fernández Islands, Chile. 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal. Arquipelago.
- López-Sepúlveda, P., H. Montoya, G. Fuentes, K. Takayama, P. Peñailillo, J. Greimler, D. J. Crawford, M. Baeza, E. Ruiz, L. Letelier & T. F. Stuessy 2016. Anagenetic speciation and genetic variation in *Dysopsis hirsuta* (Mull. Arg.) Skottsb. (Euphorbiaceae), an endemic of Robinson Crusoe Island, Juan Fernández Archipelago, Chile. 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal.

PUBLICATIONS

Books:

- Crawford, D. J. 1990. Plant Molecular Systematics: Macromolecular Approaches. John Wiley and Sons, New York, 388 pp.
- Crawford, D. J. and V. B. Smocovitis (eds.) 2004. The Scientific Papers of G. Ledyard Stebbins (1929-2000). Koeltz Scientific Books, Koenigstein, Germany. 355 pp.
- Stuessy, T. F., D. J. Crawford, D. E. Soltis and P. S. Soltis. 2014. Plant Systematics: The origin, interpretation, and ordering of plant biodiversity. Koelz Scientific Books. 425 pp.
- Stuessy, T. F., D. J. Crawford, P. López-Sepúlveda, C. M. Baeza, and Eduardo Ruiz (eds.). 2017. Plants of Oceanic Islands: Evolution, Biogeography, and Conservation of the Flora of the Juan Fernández (Robinson Crusoe) Archipelago. Cambridge University Press. ca. 500 pages.

Book Chapters:

- Crawford, D. J. 1983. Phylogenetic and systematic inferences from electrophoretic studies, pp. 257-287. *In*: Isozymes in Plant Genetics and Breeding, Part A, S.O. Tanksley and T.J. Orton, Eds., Elsevier, Amsterdam.
- Crawford, D. J., R. Whitkus, and T. F. Stuessy. 1987. Plant evolution and speciation on

oceanic islands, pp. 183-199. *In*: Patterns of Differentiation in Higher Plants, K. Urbanska, ed., Academic Press, London.

- Crawford, D. J. 1989. Enzyme electrophoresis and plant systematics, pp. 146-164. *In*: Isozymes in Plant Biology, D.E. Soltis and P.S. Soltis, eds. Dioscorides Press, Portland.
- Crawford, D. J., J. D. Palmer, and M. Kobayashi. 1991. Chloroplast DNA restriction site variation and the evolution of the annual habit in North American *Coreopsis* (Asteraceae), pp. 280-294. *In*: Plant Molecular Systematics, D. Soltis, P. Soltis and J. J. Doyle, eds. Chapman and Hall.
- Tadesse, M., D. J. Crawford, and E. B. Smith. 1996. Generic concepts in *Bidens* and *Coreopsis* (Compositae): an overview, pp. 493-498. *In*: L. J. G. van der Maeseu et al., eds., The Biodiversity of African Plants, Kluwer, The Netherlands.
- Crawford, D. J., and T. F. Stuessy. 1997. Plant speciation on oceanic islands, pp. 249-267. *In*: K. Iwatsaki and P. H. Raven, eds., Evolution and Diversification of Land Plants. Springer-Verlag, Tokyo.
- Francisco-Ortega, J., D. J. Crawford, A. Santos-Guerra and R. K. Jansen. 1997. Origin and evolution of *Argyranthemum* (Asteraceae: Anthemideae) in Macaronesia, pp. 407-431. *In*: T. J. Givnish and K. J. Sytsma, eds., Molecular Evolution and Adaptive Radiation. Cambridge Univ. Press, Cambridge.
- Stuessy, T. F., D. J. Crawford, C. Marticorena and R. Rodriguez. 1998. Island biogeography of angiosperms of The Juan Fernández archipelago, pp121-138. *In*: T. F. Stuessy and M. Ono, eds., Evolution and Speciation in Island Plants. Cambridge Univ. Press, Cambridge.
- Crawford, D. J., T. Sang, T. F. Stuessy, S.-C. Kim. and M. Silva O. 1998. Macromolecular data and the evolution of two endemic genera of the Asteaceae on the Juan Fernández Islands, pp 97-119. *In*: T. F. Stuessy and M. Ono, eds., Evolution and Speciation in Island Plants. Cambridge Univ. Press, Cambridge.
- Stuessy, T. F., D. J. Crawford and M. Silva O. 1998. Isolating mechanisms and modes of speciation in the vascular flora of the Juan Fernández Islands, pp. 79-86. *In*: T. F. Stuessy and M. Ono, eds., Evolution and Speciation in Island Plants. Cambridge Univ. Press, Cambridge.
- Stuessy, T. F. and D. J. Crawford. 1998. Chromosomal stasis during speciation in angiosperms of oceanic islands, pp. 307-324 86 *In*: T. F. Stuessy and M. Ono, eds., Evolution and Speciation in Island Plants. Cambridge Univ. Press, Cambridge.
- Baldwin, B. G., D. J. Crawford, J. Francisco-Ortega, S.-C. Kim, T. Sang and T. F. Stuessy. 1998. Molecular phylogenetic insights on the origin and evolution of oceanic island plants, pp. 410-444. *In*: D. Soltis, P. Soltis and T. Doyle, eds., Molecular Systematics of Plants II. DNA Sequencing. Kluwer Academic Publishers, New York.
- Stuessy, T. F., U. Swenson, C. Marticorena, and D. J. Crawford. 1998. Loss of plant diversity and extinction on Robinson Crusoe Islands, Chile, pp. 243-257. *In*: C.-I. Peng and P. P. Lowry II, eds, Rare, Threatened, and Endangered Floras of Asia and the Pacific Rim. Institute of Botany, Academica Sinica Monograph Series No. 16. Taipei.
- Mesfin Tadesse, D. J. Crawford, and S.-C. Kim. 2001. A cladistic analysis of morphological features in *Bidens* L. and *Coreopsis* L. (Compositae-Heliantheae) with notes on generic delimitation and systematics, pp. 85-102. *In*: Biodiversity Research in the Horn of Africa Region, I Friis and O. Ryding, eds. Biol. Skr. Dan. Selsk. 54. Copenhagen.
- Crawford, D. J., E. Landolt, D. H. Les, and R. T. Kimball. 2006. Speciation in duckweeds (Lemnaceae): phylogenetic and ecological inferences. Aliso 22: 229-240. *In* J. T. Columbus, E. A. Friar, J. M. Porter, L. M. Prince, and M. G. Simpson (eds.). Monocots: comparative biology and evolution, 2 vols. Rancho Santa Ana Botanic Garden, Claremont, California, USA.
- Crawford, D. J., T. K. Lowrey, G. J. Anderson, G. Bernardello, A. Santos-Guerra, and T. F. Stuessy. 2009. Genetic diversity in the colonizing ancestors of Asteraceae endemic to

oceanic islands: Baker's law and polyploidy, pp. 139-151. *In*: V. A. Funk, A. Susanna, T. F. Stuessy and R. J. Bayer, eds. Systematics, Evolution and Biogeography of the Compositae. International Organization of Plant Taxonomy: Vienna.

- Crawford, D. J., Mesfin Tadesse, M. E. Mort, R. T. Kimball, and C. P. Randle. 2009 Tribe Coreopsideae, pp. 713-730. *In*: V. A. Funk, A. Susanna, T. F. Stuessy and R. J. Bayer, eds. Systematics, Evolution and Biogeography of the Compositae. International Organization of Plant Taxonomy: Vienna.
- Crawford, D. J., A. Anderberg, B. Baldwin, R. Bayer, J. Bonifacino, I. Breitwieser, L. Brouillet, R. Carbajal, R. Chan, A. Coutinho, **D. J. Crawford**, and 42 other authors. 2009. Compositae metatrees: the next generation, pp. 747-777. *In*: V. A. Funk, A. Susanna, T. F. Stuessy and R. J. Bayer, eds. Systematics, Evolution and Biogeography of the Compositae. International Organization of Plant Taxonomy: Vienna.
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Oceanic Plant Lineages as Systems for Studying Speciation: Overview and Examples from Macaronesian *Tolpis* (Asteraceae)

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The common view of plant speciation, especially in oceanic archipelagos, is that prezygotic barriers are important in early stages of divergence, with postzygotic factors accruing subsequent to geographic isolation. The occurrence of natural interspecific hybrids and the synthesis of vigorous, fertile F_1hybridsargueagainststrongpostzygoticbarriersbetweeninsularspecies.StudiesofthegenusTolpis in Macaronesian archipelagos suggest that two additional factors may promote population divergence and speciation. One prezygotic factor that has received little attention but may be operative, is the transition from outcrossing to selfing. This transition has occurred at least twice in Macaronesian *Tolpis*. Recent genetic/genomic studies provide insights into the breakdown of self-incompatibility (non-functional S-locus) and suggest how variable dominance at the S-locus could facilitate the origin of selfing populations Selfing could reduce gene flow among populations and fix phenotypic traits in populations, and promote speciation. Studies in *Tolpis* demonstrate postzygotic isolating barriers, namely, reduced F_1 pollen fertility. Reduced pollen fertility correlates with phylogenetic distance, suggesting that pollen sterility factors accumulate subsequent to divergence. At the other extreme, progeny of maternal plants vary infertility, and crosses between populations on the same island may have reduced fertility. Some plants with reduced pollen fertility exhibit meiotic irregularities indicating chromosomal mutations while in other cases 9 bivalents were seen. Genic/chromosomal factors could facilitate initial divergence in addition to accumulating subsequent to divergence. Synthetic advanced generation hybrids (F_5) between two *Tolpis* species exhibited hybrid breakdown (pollen fertility, time to germination, malformed embryos) indicating negative epistatic interactions at fitness loci. Postzygotic isolating factors may play a larger role in divergence and speciation in island lineages than is currently recognized.

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EDUCATION

2001 Bachelor of Science (Biology), Tokyo Metropolitan University, Department of Biology

2003 Master of Science (Biology), Tokyo Metropolitan University, Department of Biology

2006 Doctorate of Science (Biology), University of Tokyo, Department of Biology

2007-2010 Japan Society for the Promotion of Science (JSPS), Research Fellow Chiba University, Department of Biology

2010-2012 JSPS Fellow for Research Abroad, University of Vienna, Department of Systematic and Evolutionary Botany

EXPERIENCE

2003-2006 Research Assistant, The University of Tokyo, Department of Biology
2006-2007 Research Assistant, Chiba University, Department of Biology
2008-2010 Adjunct teacher, Waseda University, Department of Education
2010 Research Assistant, Chiba University, Department of Biology
2012-2015 Project Assistant Professor, The University of Tokyo, The University Museum
2013 Adjunct teacher, Waseda University, Department of Education
2013 Adjunct teacher, Tokyo Gakugei University, Department of Education
2013-2015 Adjunct teacher, Tokyo University of Agriculture and Technology, Department of Agriculture
2014 Adjunct teacher, Japan Woman University, Department of Education
2014 Adjunct teacher, Chiba University, Department of Biology
2015 Adjunct teacher, Tokyo Gakugei University, Department of Education
2015-2016 Adjunct teacher, Tokyo Metropolitan University, Department of Biological Sciences
2015-2016 Adjunct teacher, The University of Tokyo, Department of Biology

AWARD

2006 Presentation award in the annual meeting, Japanese Society for Plant Systematics

2008 Presentation award in the annual meeting, Best presentation in Seed dispersal section, Ecological society of Japan
2009 Encouraging prize to outstanding young researcher, Japanese Society for Plant Systematics
2013 Presentation award in the annual meeting, Japanese Society for Plant Systematics
2016 Encouraging prize to outstanding researcher, Plant Society of Japan

SCIENTIFIC SOCIETIES

Botanical Society of Japan, Ecological Society of Japan, Japanese Society for Plant Systematics, Society of Evolutionary Studies, Japan, Botanical Society of America, International Association for Plant Taxonomy, Study of Himalayan Plants

PROFESSIONAL SERVICES-REVIEWS (number of times)

Acta Phytotaxonomica et Geobotanica (4), Annals of Botany (3), Applied Biochemistry and Biotechnology (1), Aquatic Botany (1), Archives of Biological Science (1), Biochemical Systematics and Ecology (1), Biological Conservation (1), BMC Evolutionary Biology (2), Botanical Journal of the Linnean Society (4), European Journal of Forest Research (2), Evolutionary Applications (1), Frontier in Plant Science ()1,International Journal of Molecular Science (1), Journal of Biogeography (4), Journal of Forest Research (1), Journal of Plant Biology (1), Journal of Plant Research (23), Journal of Systematics and Evolution (1), Molecular Ecology (5), Molecular Phylogeny and Evolution (1), Plant Species Biology (1), Plant Systematics and Evolution (1), PLOS ONE (1) Taxon (1), Tree Genetics & Genomes (4), Vegetation History and Archaeobotany (2)

FIELD EXPERIENCE (year)

Bonin Islands (2000, 2001, 2002, 2007, 2013), Hawaii (2003), Samoa (2003), Tonga (2003), Nigeria (2003), Puerto Rico (2003), Mexico (2003, 2008), Ghana (2004), South Africa (2004), Singapore (2004), Australia (2004), Seychelles (2005, 2012), Mauritius (2005), Brazil (2005, 2007, 2015), Costa Rica (2007), French Polynesia (2007), New Caledonia (2007), Fiji (2009), China (2009), Singapore (2010), Vanuatu (2010), New Caledonia (2013), Australia (2013), Chile (2013, 2015), French Polynesia (2014), Chile (2014, 2015), Panama (2016), Canary Island (2016)

GRANT

As PI

- "Population genetic analysis of see *Hibiscus* (*Hibiscus hamabo*, Malvaceae) in the Izu Peninsula using whole chloroplast DNA sequences" The New Technology Developmetn Foundation, 1,500,000 JPY, 2014
- "Evolution and genetic diersity of endemic plants in the Juan Fernandz Archipelago, Chile" Open Partnership Projects of JSPS Bilateral Jonit Research, 5,000,000 JPY, 2013-2015
- "Adaptation and evolution of coastal plants into inland habitat on oceanic islands" JSPS KAKENHI (Grant number, 25840137), 4,550,000 JPY, 2013-2015
- "Population genetic analysis of see *Hibiscus* (*Hibiscus hamabo*, Malvaceae) in the Izu Peninsula using whole chloroplast DNA sequences"The New Technology Developmetn Foundation, 1,500,000 JPY, 2013
- "Presentation in Botany 2012" Travel award from Österreichische Forschungsgemeinschaft, 700 EUR, 2012
- "Presentation in International Botanical Congress 2011" Travel award from Österreichische

Forschungsgemeinschaft, 700 EUR, 2011

- "Genetic consequences of contrasting evolutionary modes in oceanic island plants: anagenesis vs. cladogenesis" JSPS Postdoctoral Fellowships for Research Abroad, 15,600,000 JPY, 2010-2012
- "Long distance seed dispersal and hybridization of *Rhizophora* in South Pacific Islands" Fujiwara Natural History, 492,000 JPY, 2010
- "Multilocus phylogeography of pantropical plants with sea-drifted seeds" JSPS Research Fellowships, 3,300,000 JPY, 2007-2009
- "Presentation in Botany 2006" Advancement grant for presentation in foreign countries from the Botanical Society of Japan, 100,000 JPY, 2006
- "Population genetics of pantropical plants with sea-drifted seeds, *Hibiscus tiliaceus* and *H. pernambucensis*" The Sasakawa Scientific Research Grant from The Japan Science Society, 610,000 JPY, 2005
- "Field survey of coastal plants in Brazil" Student advancement grant from The University of Tokyo, 200,000 JPY, 2005

As a collaborator

- "Investigation on a ring species formation in global scale" JSPS KAKENHI (Grant number, 15K14588, 4,290,000 JPY, 2015-2017 (as a collaborator of Dr. Tadsahi Kajita)
- "Evolutionary study on root nodule symbiosis in plants on oceanic islands" JSPS KAKENHI (Grant number, 15H05232, 4,550,000 JPY (2015), 2015-2018 (as a collaborator of Dr. Tadsahi Kajita)
- "Global conservation genetics of mangroves: analyses of major five groups" JSPS KAKENHI (Grant number, 25290080, 15,730,000 JPY, 2013-2016 (as a collaborator of Dr. Tadsahi Kajita)
- "Phylogeography and poloidy of *Patorinia villosa*" JSPS KAKENHI (Grant number, 25440203, 5,330,000 JPY, 2013-2016 (as a collaborator of Dr. Hiroshi Ikeda)
- "Genetic and species diversity in Himalayan plants" JSPS KAKENHI (Grant number, 23255005), 29,120,000 JPY, 2011-2014 (as a collaborator of Dr. Hiroshi Ikeda)
- "Global conservation genetics of mangroves" JSPS KAKENHI (Grant number, 22405005), 19,370,000 JPY, 2010-2013 (as a collaborator of Dr. Tadsahi Kajita)
- "Exchange program for conservation genetics of mangroves" JSPS Invitation program for East Asian young researchers, 9,443,000 JPY, 2011 (as a collaborator of Dr. Tadsahi Kajita)
- "Exchange program for conservation genetics of mangroves" JSPS Invitation program for East Asian young researchers, 7,766,000 JPY, 2009-2010 (as a collaborator of Dr. Tadsahi Kajita)
- "Molecular population genetic study for pantropical plants with seadrifted seeds : long distance dispersal and its consequences" JSPS KAKENHI (Grant number 19370032), 6,370,000 JPY, 2007-2009 (as a collaborator of Dr. Tadsahi Kajita)
- "Speciation from pantropical plants with sea-drifted seeds into endemic plants in oceanic islands" The Yamada Scientific Research Grand, 2,500,000 JPY, 2006 (as a collaborator of Dr. Tadsahi Kajita)
- "Molecular population genetic study for pantropical plants with seadrifted seeds in aspects of their species integration and speciation" JSPS KAKENHI (Grant number 16370043), 9,400,000 JPY, 2004-2006 (as a collaborator of Dr. Tadsahi Kajita)

PUBLICATIONS

Peer-reviewed:

- Masaru Bamba, Sayuri Nakata, Seishiro Aoki, Koji Takayama, Juan Núñez-Farfán, Motomi Ito, Masaki Miya, Tadashi Kajita. Wide distribution range of rhizobial

symbionts associated with pantropical sea-dispersed legumes. Antonie van Leeuwenhoek, online first, 2016

- Takashi Yamamoto, Yoshiaki Tsuda, Gustavo Maruyama Mori, Mariana Vargas Cruz, Yoshimi Shinmura, Alison W. K. Shan, Koji Takayama, Takeshi Asakawa, Takeru Yamakawa, Monica Suleiman, Juan Núñez-Farfán, Edward L. Webb, Yasuyuki Watano, Tadashi Kajita. Development and characterization of 27 microsatellite markers for mangrove fern *Acrostichum aureum* L. (Pteridaceae). Applications in Plant Sciences, 4, apps.1600042, 2016
- Junya Ono, Jean W. H. Yong, Koji Takayama, Mohd Nazre Bin Saleh, Alison K. S. Wee, Takeshi Asakawa, Orlex Baylen Yllano, Severino G. SalmoIII, Monica Suleiman, Nguyen Xuan Tung, Khin Khin Soe, Sankararamasubramanian Halasya Meenakshisundaram, Yasuyuki Watano, Edward L. Webb, Tadashi Kajita. *Bruguiera hainesii*, a critically endangered mangrove species, is a hybrid between *B. cylindrica* and *B. gymnorhiza* (Rhizophoraceae). *Conservation Genetics*, 17, 1137-1144
- Patricio López Sepúlveda, Koji Takayama, Josef Greimler, Patricio Peñailillo, Daniel J. Crawford, Marcelo Baeza, Eduardo Ruiz, Gudrun Kohl, Karin Tremetsberger, Alejandro Gatica, Luis Letelier, Patricio Novoa, Johannes Novak, Tod F. Stuessy. Biogeography and genetic consequences of anagenetic speciation of Rhaphithamnus venustus (Verbenaceae) in the Juan Fernández archipelago, Chile: insights from AFLP and SSR markers. *Plant Species Biology*, online first, 2016
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- Alison Wee Kim Shan, Koji Takayama, Jasher L Chua, Takeshi Asakawa, Sankararamasubramanian H Meenakshisundaram, Onrizal, Bayu Adjie, Erwin Riyanto Ardli, Sarawood Sungkaew, Norhaslinda Binti Malekal, Nguyen Xuan Tung, Severino G Salmo III, Orlex Baylen Yllano, M Nazre Saleh, Khin Khin Soe, Yoichi Tateishi, Yasuyuki Watano, Shigeyuki Baba, Edward L Webb, Tadashi Kajita. Genetic differentiation and phylogeography of partially sympatric species complex *Rhizophora mucronata* Lam. and *R. stylosa* Griff. using SSR markers. *BMC Evolutionary Biology*, 15, 57, 2015
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- Matin Miryeganeh, Koji Takayama, Yoichi Tateishi, Tadashi Kajita. Long-distance dispersal by sea-drifted sees has maintained the global distribution of *Ipomoea pes-caprae* subsp. *brasiliensis* (Convolvulaceae). *PLoS ONE*, e91836, 2014
- Alison Wee Kim Shan, Koji Takayama, Takeshi Asakawa, Bijoy Thompson, Onrizal, Sarawood Sungkaew, Ngyuyen Xuan Tung, Nazre Saleh, Khin Khin Soe, Hugh Tan,

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- Koji Takayama, Mariko Tamura, Yoichi Tateishi, Tadashi Kajita. Strong genetic structure over the American continents and transoceanic dispersal in the mangrove genus *Rhizophora* (Rhizophoraceae), revealed by broad-scale nuclear and chloroplast DNA analysis. *American Journal of Botany*, 100, 1191-1201, 2013
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- Hiroshi Kudoh, Ryouji Shimamura, Koji Takayama, Dennis F. Whigham. Consequence of hydrochory in *Hibiscus. Plant Species Biology* [0.792], 21, 127-133, 2006

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- Koji Takayama 2013. Phylogeography of Pantropical plants with sea-drifted seeds. Pp. 81-100. In. Shuseibutugaku Kenkyu
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Distributional, morphological and genetic consequences of ecological adaptation to the inland habitat of oceanic islands in a coastal plant, *Hibiscus tiliaceus* (Malvaceae)

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To understand the evolutionary process that coastal plants inhabited inland environments of oceanic islands, which were often observed in oceanic islands, we performed phylogeographic and morphological analyses in *Hibiscus tiliaceus* (Malvaceae) and its related species. *Hibiscus tiliaceus* is a large shrub or tree that is distributed widely in tropics of the Old World. The species usually grows in coastal thickets along brackish rivers and has long distance seed dispersal ability via ocean. We collected population samples worldwide, especially populations in the Bonin (Ogasawara) and the South Pacific Islands in where inland endemic species and populations occurred.

Phylogeographic analyses showed that there was substantial gene flow via seeds among distant populations of *H. tiliaceus* within Pacific and Indian Ocean. Phylogenetic tree constructed by cpDNA sequences suggested that *H. glaber* endemic to the Bonin Islands had been derived from *H. tiliaceus*, but the current populations of *H. tiliaceus* in the Island did not possess the most closely related haplotypes to the endemic species. These results emphasize the importance of geographical isolation during speciation of *H. glaber*. The co-occurrence of *H. glaber* and *H. tiliaceus* on the Islands are attributable to multiple migration events of different lineages into the Islands.

On the other hand, in the South Pacific Islands, there were coastal and inland populations of *H. tiliaceus* and they were not genetically differentiated within a single island, indicating the rapid adaptation into inland habitats in the Islands. Morphological analyses of flowers revealed that the distance between anther and stigma was significantly shorter in inland populations than coastal ones of *H. tiliaceus* in the Islands. A similar pattern was reported in the comparison between *H. glaber* and *H. tiliaceus* in the Bonin Islands. The morphological changes observed in the both inland populations/species should ensure automatic selfing and increase the number of seed sets in poor pollinator fauna in the oceanic islands. Furthermore, in the Bonin Island, loss of seed dispersal ability via ocean was found in *H. glaber*. We conclude from these results that both changes of reproductive systems and dispersal mechanisms are keys for the ecological adaptation/speciation to the inland habitat for coastal plants.

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EDUCATION

- Ph.D., Plant Biology, University of California, Davis. December, 2002. Dissertation: A systematic study of tribe Neillieae (Rosaceae). Advisor: Daniel Potter, Ph.D.
- Master of Science, Biology, Seoul National University, Korea, February, 1995. Thesis: A systematic study on the *Aconitum uchiyamai* complex (Ranunculaceae). Advisor: Chong-Wook Park, Ph.D.
- Bachelor of Science, Botany, Seoul National University, Korea, February, 1991. Thesis: Flora of Mt. Myun. Advisor: Chong-Wook Park, Ph.D.

NEW TAXONOMIC NAMES PUBLISHED

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- *Calanthe rubra* S. H. Oh, H. J. Suh & C. W. Park, sp. nov., Phytotaxa 218: 75 (2015)
- *Spiraea insularis* (Nakai) H. Shin, Y. D. Kim & S. H. Oh, comb. nov., Novon 21: 374 (2011)
- *Notholithocarpus* Manos, Cannon & S. Oh, gen. nov., Madroño 55: 188 (2008)
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Books:

- Sun, B. Y., H. Shin, J. O. Hyun, Y. D. Kim, and **S. Oh.** 2014. Vascular Plants of Dokdo and Ulleungdo Islands in Korea. Ministry of Environment. 360 pp.
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Phylogeny and Evolution of Endemic Species on Ulleungdo Island, Korea: Cases of *Fagus multinervis* (Fagaceae) and *Spiraea insularis* (Rosaceae)

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Evolution on islands often results in remarkable morphological or ecological changes not observed in ancestors on the mainland. Ulleungdo Island, a small volcanic island in the East Sea of Korea, however, shows a low level of morphological differentiation compared to progenitor species in neighboring regions. To understand the patterns of evolution on Ulleungdo Island, more detailed phylogenetic and comparative phylogeographic studies are needed. Cases of *Fagus multinervis* and *Spiraea insularis* are presented here as an example. *Fagus multinervis*, which occurs only on Ulleungdo Island, was described primarily based on one of its stem characteristics: it branches at the base, producing several primary trunks. In part because no extant *Fagus* species are found in mainland Korea, the phylogenetic relationships associated with the species have been controversial. Phylogenetic analyses of the nucleotide sequences of the *trnK-matK*, *trnL-trnF*, *trnH-psbA*, and *atpB-rbcL* regions of plastid DNA and the second intron of the nuclear *LEAFY* gene demonstrate that *F. multinervis* is monophyletic and closely related to *F. engleriana* and *F. japonica*. However, contentions of a sister relationship of *F. multinervis* with either of those species remain unresolved. Morphologically, F. multinervis is very similar to *F. engleriana*, suggesting that *F. multinervis* is a cryptic species on the island. *Spiraea insularis*, with an extremely restricted distribution range on Ulleungdo Island, has been classified as belonging to the genus *Physocarpus*. Comparative morphology studies of *Physocarpus* and *Spiraea* and the reconstructed phylogeny of the *rbcL*, *matK*, *ndhF*, and *trnL-trnF* regions from exemplars of Rosaceae strongly support the placement of *P. insularis* within *Spiraea*. Further phylogenetic analyses of the tribe Spiraeeae based on *trnL-trnF* and ITS data have shown that *S. insularis* is closely related to *S. chamaedryfolia*. A morphological analysis revealed that *S. insularis* differs from *S. chamaedryfolia* by having larger leaf blades that are subcordate or truncate at the base. Hence, given these two cases, plants on Ulleungdo Island have no or few morphological apomorphies, thus complicating taxonomic decisions. Understanding origins and characteristics of insular plants on Ulleungdo Island is necessary for better conservation efforts, such as protecting its natural environment to conserve evolutionary patterns and processes in addition to specific conservation programs for species in peril.

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EDUCATION

- October 1995–July 1999: Department of Plant Sciences, University of Oxford. PhD – 'The Systematics of the southern Indian and Sri Lankan Strobilanthinae'
- October 1992–July 1993: Oxford University Department of Educational Studies. Postgraduate Certificate in Education, Biology and Secondary Science.
- October 1988–July 1991. The University of Reading. BSc (Hons) Botany, First Class.

EMPLOYMENT HISTORY

Sep. 2016-present:	Principal Curator in Charge, Algae, Fungi and Plants Division, Department of Life Sciences, The Natural History Museum, London.
Apr. 2006-Aug. 2016:	Researcher, SC3 (formerly Band 4), Department of Life Sciences (formerly Botany), The Natural History Museum, London.
Apr. 2001–Apr. 2006:	Researcher, Band 5, Department of Botany, The Natural History Museum, London.
Apr. 2000–Apr. 2001:	Plant Taxonomist, Euro+Med PlantBase Project. Department of Botany, The University of Reading.
Jul. 1999–Apr. 2000:	Post-Doctoral Research Assistant, Department of Plant Sciences, University of Oxford.
Sep. 1993-Aug. 1995:	Teacher i/c Biology, Bedwell (now Marriots) School, Stevenage, Herts.

FIELDWORK EXPERIENCE

Azores, (2016, 1w; 2012, 1w; 2011, 1w; 2010, 2w; 2009, 2w; 2008, 2.5w); Cape Verdes (2013, 1.5w); Canary Islands (2016 1w; 2015, 1.5w; 2011, 1w; 2010, 1w; 2007, 1w; 2004,

1w; 2003, 2w; 2002, 2w); Ethiopia (2011, 2w); India (1997, 6w; 1998, 4w); Madeira (2016, 1w; 2012, 1w); Morocco (2005, 2w; 2004, 2w; 2002, 2.5w), Sri Lanka (1997, 4w)

EXTERNAL ACTIVITIES

- Deputy Editor in Chief, Journal of Biogeography (2015-present)
- Editor, Journal of Biogeography (2011-2015)
- Associate Editor, Journal of Biogeography (2009-2011)
- Associate Editor, Phytotaxa (2009-2015)
- Associate Editor, BMC Evolutionary Biology (2013-2014)
- Editorial Advisory Board member, Lagascalia (2011-2014)
- Council member (2002-2005; 2012-present) and Grants and Awards Secretary (2013-2016), Systematics Association.
- Governor (2005-present) and Hon. Secretary (2006-present), Botanical Research Fund
- Member, Organising committee: Floramac 2010 (University of the Azores, September 2010) and Floramac 2012 (University of Madeira, September 2012).
- Co-organiser, CEE Symposium: Evolution and ecology of islands. ZSL, April 2006.
- Co-organiser, Young Systematists' Forum (December 2004 & 2005)
- Visiting Research Fellow, School of Biological Sciences, University of Bristol (2010-2014)
- External member, Synthesys ES-TAF evaluation panel, 2016
- Fellow, Linnean Society of London
- Fellow, Royal Geographical Society

AWARDS

Brian Thomas Styles Memorial Prize for an outstanding thesis in the field of tropical or subtropical plant taxonomy, University of Oxford, January 2000.

PEER REVIEWED PUBLICATIONS

Jones, K.E., Pérez-Espona, S., Reyes-Betancort, A., Pattinson, A., Caujapé-Castells, J., Hiscock, S.A. and Carine, M.A. (2016). Why do different oceanic archipelagos harbour contrasting levels of species diversity? The Macaronesian endemic genus *Pericallis* (Asteraceae) provides insight into explaining the 'Azores Diversity Enigma' . *BMC Evolutionary Biology* 16: 202. doi: 10.1186/s12862-016-0766-1

White, O.W., Carine, M.A. and Chapman, M.A. (2016). Transcriptome sequencing and Simple Sequence Repeat (SSR) marker development for three Macaronesian endemic plant species. *Applications in Plant Sciences* 4(8):1600050. doi: http://dx.doi.org/10.3732/apps.1600050.

Mitchell, T.C., Williams, B.R.M., Wood, J.R.I., Harris, D.J., Scotland, R.W. and Carine, M.A. (2016) How the temperate world was colonised by bindweeds: biogeography of the Convolvuleae (Convolvulaceae). *BMC Evolutionary Biology* 16:16002E DOI: 10.1186/s12862-016-0591-6.

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OTHER PUBLICATIONS AND REPORTS

Francisco-Ortega, J., Santos-Guerra, A., Romeiras, M.M., Carine, M.A., Rouhan, G., Sånchez-Pinto, L., Santiago-Valentín, E. and Duarte, M.C. (2016). Plant exploration and botanical art in the Atlantic Islands. *The Tropical Garden* 72: 31-33

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Francisco-Ortega, J., Santos Guerra, A., Jarvis, C.E. and Carine, M.A., Menezes de Sequeira, M. & Maunder, M. (2010). The search for new plants. Early plant exploration brought strange plants to European collections. *The Tropical Garden* 66: 43–47.

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Silva, L., Pinto, N., Press, B., Rumsey, F., Carine, M., Henderson, S. and Sjörgren, E. (2005) List of vascular plants (Pteridophyta e Spermatophyta) pp 131-156 in Borges, P.A.V., Cunha, R., Gabriel, R., Martins, A. F., Silva, A. and Vieira, V. (editors) *A list of the terrestrial fauna (Mollusca and Arthropoda) and flora (Bryophyta, Pteridophyta and Spermatophyta) from the Azores.* Direcção Regional do Ambiente and Universidade dos Açores, Horta, Angra do Heroísmo and Ponta Delgada.

CONFERENCE TALKS AND POSTERS

Carine, M.A. (2016). Why do different oceanic archipelagos harbour contrasting levels of species diversity? Diversification processes in the Macaronesian archipelago floras. In: Island Biology Conference, 2016, Universidade dos Açores. [Invited talk]

Carine, M.A. (2016). Why do different oceanic archipelagos harbour contrasting levels of species diversity? Diversification processes in the Macaronesian archipelago floras. In: CE3C workshop, Patterns of evolution and diversification within the Macaronesian biodiversity hotspot. University of Lisbon. [Invited talk]

Carine, M.A. (2015). Why do different oceanic archipelagos harbour contrasting levels of species diversity? In: Systematics: the science that underpins biology. Systematics Association Biennial. University of Oxford [Contributed talk]

Carine, M.A. (2014). Island radiations and the evolution of the Macaronesian Island floras. In: Evolutionary Plant Radiations: Where, When, Why & How? Institute of Systematic Botany, University of Zürich. [Invited talk]

Carine, M.A. (2013). Herbaria and the discovery of the Macaronesian flora. In: Seminario Internacional sobre Historia Natural de la Macaronesia. [Invited talk]

Carine, M.A. (2012). The discovery of island floras. In: FloraMac 2012 [Invited talk]

Carine, M.A. (2012). Macaronesia: the end of the colonisation road for *Polypodium*? In: British Pteridological Society Autumn Meeting. [Invited talk]

Carine, M.A. (2011). Does the Linnean shortfall explain the Azores diversity enigma? In: Fundación Amurga International Conferences on Insular Biodiversity 2011 [Invited talk]

Carine, M.A. (2010). The Azores diversity enigma: why are there apparently so few Azorean endemic plants species and why are they apparently so widespread? In: Floramac 2010: what do we know about the Macaronesian flora ten years into the 21stCentury?[Contributedtalk]

Carine, M.A. (2008). Endemism and evolution of the Macaronesian flora. In: Beyond Cladistics: Festschrift for Prof. Chris Humphries. Linnean Society of London [Invited talk]

Carine, M.A. (2008). Disentangling the bindweeds: a molecular and morphological study of British *Calystegia*. In: Understanding our alien flora. Botanical Society of the British Isles [Invited talk]

Carine, M.A., Santos Guerra, A. and Francisco-Ortega, J. (2006). Evolution and relationships of the Macaronesian flora: insights from the genus *Convolvulus.* In: Macaronesian Workshop on Plant Molecular Genetics and Conservation, University of Azores [Invited talk]

Carine, M.A. (2005) Relationships and evolution of the dragon trees (*Dracaena* L.). Fifth biennial meeting of The Systematics Association. [Contributed talk]

Carine, M.A. (2004). Congruence, pseudoincongruence and the evolution of Macaronesian endemic *Convolvulus.* In: Plant Evolution in Mediterranean Climate Zones: IX IOPB Meeting. [Contributed talk]

Carine, M.A. (2003). Evolution of the Macaronesian flora: molecular evidence for multiple colonisations into Macaronesia and back-colonisation of the continent in *Convolvulus* L. (Convolvulaceae). Fourth Biennial Meeting of the Systematics Association: Programme and Abstracts. [Contributed talk]

Carine, M.A., Francisco-Ortega, J. and Russell, S.J. (2003). Evolution of neoendemism in the western Mediterranean: a role for recent colonisation from Macaronesia in *Convolvulus* L. In: Royal Society Discussion meeting: Evolutionary Legacies of the Ice Ages. [Poster]

Carine, M.A. (2002). Evolution of *Convolvulus* L. in Macaronesia and the western Mediterranean. In: Plant Species Level Systematics, Patterns, processes and new applications: Abstracts. [Contributed talk]

Robba, L., Carine, M.A., Raimondo, F. and Russell, S.J. (2002). Patterns of variation in *Cynara* : a preliminary molecular study. In: Plant Species Level Systematics, Patterns, processes and new applications: Abstracts. [Poster]

Carine, M.A. (2001). Evolution of Macaronesian *Convolvulus* L. In: Third Biennial Meeting of the Systematics Association: Timetable, abstracts and participants [Poster]

Carine, M.A. (2001). Evolution of Macaronesian *Convolvulus* L. In: X Optima Meeting: Abstracts. [Poster]

Jury, S.L. and Carine, M.A. (2000). Euro+Med PlantBase: a new initiative in plant systematics. In: Taxonomy Today: Diversity and the Tree of Life, Programme and Abstracts. [Poster]

Carine, M.A. and Scotland, R.W. (1998). 68 taxa and 32 characters: resolving species relationships using morphological data. In: Hennig XVII: 17thMeetingoftheWilliHennigSociety,ProgrammeandAbstracts. [Contributed talk]

Carine, M.A. and Scotland, R.W. (1998). Pollen character distribution in *Strobilanthes* Blume *s.l.* from southern India and Sri Lanka. In: Pollen and Spores 1998: Morphology and Biology Conference Abstracts. [Contributed talk]

Carine, M.A. (1997). *Stenosiphonium* Nees and *Strobilanthes* Blume: Taxonomic problems in the southern Indian and Sri Lankan Strobilanthinae (Acanthaceae). In: Alexander, D. and Pennington, R. T. (editors). Book of Abstracts, First Biennial International Conference of the Systematics Association. [Contributed talk]

INVITED SEMINARS

2014 The discovery of oceanic island floras. School of Life Sciences Weihenstephan, Technische Universitaet Muenchen

2011 From the Western Ghats to the West African Islands: what do we know about the plant diversity of hotspots? School of Life Sciences, University of Pondicherry.

2011 The Linnean shortfall and oceanic island biogeography. Dept. of Plant Sciences, The University of Oxford.

2010 The Azores diversity enigma: why are there so few Azorean endemic flowering plants and why are they so widespread? Royal Botanic Gardens, Kew.

2010 From island syndromes to the Azores diversity enigma: phylogenetic insights into the relationships and evolution of the Macaronesian flora. Royal Botanic Garden, Edinburgh.

RESEARCH ASSOCIATES

- N. Robson (2011-present time; Scientific Associate; systematics of Hypericaceae)
- D. Pattinson. (2013-2014; funded by Departmental Research Fund and Annals of Botany Company; a digital monograph of *Hypericum*).
- B. Williams (2011-2012; funded by Syntax; Foundation Monographs - accelerating the pace of taxonomy)
- Javier Luna (2011; funded by World Collections Programme; East African Convolvulaceae)
- N. Pedersen (2006-2007; funded by A.P. Sloan and Gordon and Betty Moore Foundations; Establishing a standard DNA barcode for land plants)
- Ana Claudia Araujo (2006; funded by Kew Latin American Research Fund; molecular phylogenetics of *Rhynchospora*)
- Lavinia Robba (2005-2006; NHM-funded: relationships and evolution of *Hypericum*)
- Aelys Humpreys (2005; funded by NHM Museum Research Fund; DNA barcoding)

RESEARCH STUDENTS

Current:

2016-present: Edwin Rose. AHRC-funded. From Sir Hans Sloane to Sir Joseph Banks: the creation and use of private libraries in relation to the practice of natural history (c.1700-1830). University of Cambridge. NHM Advisor. Supervisor: Prof. Jim Secord.

2015-present: Rachael Graham. NERC-funded. The genomics of parallel adaptation to temperature-divergent niches. University of Southampton (50% NHM-based). PhD. Co-supervised by Mark Chapman (Southampton).

2015-present: Oliver White. NHM/University of Southampton funded. Homoploid hybrid speciation in *Argyranthemum* (Asteraceae). PhD. University of Southampton (50% NHM-based). Co-supervised by Mark Chapman (Southampton).

2015-present: Ranee Prakash. Self-funded. A cross-cultural study of medicinal plant use in India. University of Reading (part time; 50% NHM-based). PhD. Co-supervised by Julie Hawkins

Former PhD students:

2010-2014: Katy Jones. NHM-funded. Resolving the Azores Diversity Enigma. PhD, University of Bristol [NHM-based]. Co-supervised by S. Hiscock (Bristol)

2009-2014: Elizabeth Cooke. BBSRC-funded. Systematics of *Cardamine hirsuta*. DPhil, University of Oxford. Co-supervised by Robert Scotland and Miltos Tsiantis (OXF).

2009-2013: Ana Rita Simões. FCT-funded. Disentangling the bindweeds: systematics and evolution of Merremieae (Convolvulaceae). PhD, Reading University [NHM-based]. Co-supervised by A. Culham (RNG) & G. Staples (SING).

2007: Alex Monro. Self-funded. Taxonomy of *Pilea* (Urticaceae). PhD, Oxford Brookes University [NHM-based]. Co-supervised by A. Lack (Oxford Brookes University).

MSc/MRes students:

2015: Max Levy. Patterns of material inheritance in homoploid hybrid species of *Argyranthemum* (Asteraceae). MRes. Biosystematics, NHM & Imperial College.

2014-2015: Phoebe Richardson-Moy. Evolution of Canarian endemic *Minuartia* (Caryophyllaceae). MSc Plant Diversity, The University of Reading [Co-supervised with Alastair Culham, U. Reading]

2014-2015: Michele Lussu. Testing Darwin's naturalization hypothesis across the Atlantic. MRes. Biosystematics, NHM & Imperial College. [Co-supervised with Hanno Schaefer & Christoph Heibl, TUM]

2014: Oliver White. Diversity of Macaronesian lauroid spurges in cultivation and their value for conservation as an ex situ resource. MSc Plant Diversity, The University of Reading [Co-supervised with Alastair Culham, U. Reading and J. David, RHS]

2014: Alison Eyres. Biogeography and niche evolution of African-Asian clade of *Hypericum.* MSc Plant Diversity, The University of Reading [Co-supervised with Alastair Culham, U. Reading]

2014: Sina Omosowon. Systematics of the *Dioscorea* species of Nigeria. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College. [Co-supervised with Paul Wilkin, RBG, Kew]

2014: Lynn Reynolds. Diversity and evolution of Tristan da Cunha endemic grasses. MRes. Biosystematics, NHM & Imperial College. [Co-supervised with Maria Vorontsova, RBG, Kew]

2013: David Pattinson. A morphological assessment of Canarian *Pericallis* (Asteraceae), with implications for the Azores diversity enigma. MRes. Biosystematics, NHM & Imperial College.

2013: Georgina Bartl. A morphological re-assessment of *Pericallis lanata.* MRes. Biosystematics, NHM & Imperial College.

2012: Jenny Chapman. Evolution of Macaronesian *Lavandula.* MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College. [Co-supervised with Tim Upson, U. Cambridge]

2012: Javier Luna. Molecular systematics and evolution of *Seddera.* MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2012: Tom Mitchell. DNA barcoding and the systematics and biogeography of Convolvuleae. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2011: Reuben Ng. Are the Macaronesian Islands the end of the colonisation road? MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2011: Beth Williams. Are there any widespread Macaroensian endemics? Taxonomy and evolution of the *Ranunculus cortusifolius* complex. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2011: Simon Nouis. Relationships and evolution of the peninsula Indian flora: insights from *Strobilanthes.*. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2010: Robert Shaw. Are there any widespread Macaroensian endemics? MRes. Biosystematics, NHM & Imperial College.

2010: Elena Martinez-Klimova. Phylogeography and distribution of the Macaronesian heaths, past and present. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College. [Co-supervised by Nadia Bystriakova, NHM]

2010: Richard Thompson, Phylogenetics of *Dracaena* and *Sansevieria.* MRes. Biosystematics, NHM & Imperial College [Co-supervised with Paul Wilkin, RBG, Kew]

2008: Aurélie Desamore. Phylogeography of *Erica arborea* and *Erica scoparia* (Ericaceae). MSc. University of Liège, Belgium. [Co-supervised by A. Vanderpoorten]

2008: Juana de Egea. Reassessment of the tribal and generic delimitation of Convolvuleae (onvolvulaceae) based on ITS and trnH-psbA sequences and on morphological characters. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College.

2008: Simon Wallace. Relationships, evolution and biogeography of Macaronesian *Convolvulus* inferred from molecular and morphological data. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College

2007: Jackie Brown. Untangling Britain's bindweeds: molecular systematics of British *Calystegia*. MSc Plant Diversity, The University of Reading [Co-supervised with R. Brummitt, RBG, Kew and Mark Spence, NHM]

2005: R. Little. A molecular and morphological investigation of putative *Convolvulus* hybrids from the Canary Islands.

2004: A. Rodrigues. The dragon trees (*Dracaena*) and their colonisation of Macaronesia. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College

2004: H. Crabtree. Morphological evolution and infrageneric classification of *Convolvulus* based on a phylogenetic analysis including data from southern hemisphere taxa. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College

TEACHING AND TRAINING ACTIVITIES

2002 - present. MSc Advanced Methods in Taxonomy and Biodiversity, NHM & Imperial College, London.

2004-2015. MSc Plant Diversity, University of Reading. Coordinator of NHM visits.

2005-2010. Tutor, Gatsby Plants Project Summer School for Undergraduates, University of Leeds.

2009-2011: Invited lecturer, Final Honours Course on 'Diversity and systematics of angiosperms', Department of Plant Sciences, The University of Oxford: Diversity and evolution of angiosperms on oceanic islands.

2010 & 2012: Guest lecturer, Systematic Botany Open Course, Department of Biology, The University of Azores: cladistic methodology.

2012 & 2013: Invited Lecturer, Final Honours Tenerife fieldtrip, Department of Plant Sciences, The University of Oxford.

2013-present: NERC Advanced Training Short Course in Taxonomic Principles and Tools in Botanical Research: lectures and practicals on taxonomic principles.

2015-present: Identification trainers for the future. Introduction to taxonomy.

REVIEWS

Grant proposals

Alfred P. Sloan foundation (USA); CSIC (Spain); FRS-FNRS (Belgium); Leverhulme Foundation; National Geographic Society; NERC; NSERC (Canada), NSF (USA); NWO (Netherlands); Royal Society.

Journals

Adansonia; American Journal of Botany; Annals of Botany; Annales Botanici Fennici; Botanical Journal of the Linnean Society; Blumea; Current Biology; Ecography; Edinburgh Journal of Botany; Perspectives in Plant Ecology, Evolution and Systematics; Journal of Biogeography; Journal of Plant Research; Journal of the Botanical Research Institute, Texas; Journal of Tropical Forest Science; Kew Bulletin; Molecular Ecology; Molecular Phylogenetics and Evolution; New Phytologist; Nordic Journal of Botany; Novon; Phytotaxa; Phytokeys; Plant Biology; Plant Systematics and Evolution; PLOS One; Systematic Biology; Systematics and Biodiversity; Taxon; Trends in Ecology and Evolution.

The discovery of oceanic island floras

Mark Andrew Carine

Principal Curator in Charge, Algae, Fungi and Plants Division
Department of Life Sciences, The Natural History Museum, London
United Kingdom

Accurate knowledge of the diversity, distribution and biology of oceanic island floras is crucial for their effective conservation and sustainable management and also for their use as 'natural laboratories' for the study of evolutionary processes. The distinctive floras of oceanic islands have attracted the interests of natural historians and biologists for a very considerable time and, as a consequence, oceanic island floras may be considered well explored. Nevertheless, a recent survey of island plant conservationists identified significant limitations in our taxonomic knowledge of island plants. This talk aims to address the question: 'Do we know enough about the taxonomy of oceanic island plants?' By examining endemic floras of volcanic oceanic archipelagos and isolated islands worldwide, it considers how diversity has been discovered through time and the implications of the discovery process for both island biogeography and conservation.

Dr. Woong Lee

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EDUCATION

- Ph.D. Plant Biology (2008-2016): Kyungpook National University, Korea
- M.S. Botany (2005-2007): Kyungpook National University, Korea
- B.S. Biology(1996-2003): Kyungpook National University, Korea

PEER-REVIEWED PUBLICATIONS:

- **Lee, W.**, Yang, J., Jung, K-S., Pak, J-H., Maki, M., and Kim, S-C. Chloroplast DNA assessment of anagenetic speciation in *Rubus takesimensis* (Rosaceae) on Ulleung Island, Korea. Journal of Plant Biology (in press).
- **Lee, W.**, Jeong, K-S., Choi, K., Kim, J-S., Cho, S.H., and Pak, J-H. Morphological variation and aspect of geographic distribution of *Orobanche coerulescens* Stephan ex Willd. (Orobanchaceae) on Ulleung-do and Dok-do Islands. Korean Journal of Plant Taxonomy (in press).
- Kim, J-S., Chung, J-M., Kim, J-H., **Lee, W.**, Lee, B-Y., and Pak J-H. 2016. Floristic study and conservation management strategies of algific talus slopes on the Korean peninsula. Korean Journal of Plant Taxonomy 46: 213-246.
- Yang, J, **Lee, W.**, Kim, S.-C., and Pak, J.-H. 2015. The taxonomic entity and distribution of *Rubus palmatus* var. *palmatus* and *R. palmatus* and var. *coptophyllus* (Rosaceae) in Korea. Korean Journal of Plant Taxonomy 45: 221-226.
- Jeong, K.S., Kim, M.S., **Lee, W.,** and Pak, J-H. 2014. Intraspecific variation and geographic study of *Lonicera insularis* (Caprifoliaceae) based on chloroplast DNA sequences. Korean Journal of Plant Taxonomy 44: 202-207.
- Kim, J-S., Chung, J-M., **Lee, W.**, and Pak, J-H. 2011. *Elatostema laetevirens* Makino (Urticaceae): An unrecorded species in Korea. Korean Journal of Plant Taxonomy 41: 361-364.
- **Lee, W.**, and Pak, J-H. 2010. Intraspecific sequence variation of *trn*L/F intergenic region (cpDNA) in *Sedum takesimense* Nakai (Crassulaceae) and aspects of geographic distribution. Korean Journal of Plant Taxonomy 40: 157-162.

PEER REVIEWED BOOK CHAPTERS:

Suh, Y.B., Pak, J-H., Heo, K., Paik, W-K., Chang, K.S., Lee, Y-M., Cho, S.H., and **Lee, W.** Type specimens collected from Korea at the herbarium of the University of Tokyo. Korea National Arboretum Vol. 1~9.

The vascular flora and long-term monitoring of Dok-do Island, South Korea

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Research Institute for Ulleung-do and Dok-do Island, Kyungpook National University

The research of vascular flora on Dok-do was conducted 12 years from 2005 to 2016. The number of plants confirmed in this study was 65 taxa in total: 31 families, 52 genera, 57 species, 2 subspecies, 5 varieties and 1 forma. The species are composed of pteridophyta with on taxon, dicotyledone of angiosperm with 40 taxa, and monocotyledon with 24 taxa. By family composition, Poaceae (15 taxa), Compositae (6 taxa) and Polygonaceae (4 taxa) take up the most proportion. In Dok-do, *Orobanche coerulescens* is characterized by frequent rarity and being present in a few small populations. We investigate the intraspecific morphological variations and geographical distributions from 12 populations (28 samples) of *O. coerulescens* in Korea. Two main morphological type were detected by glabrous (G-type) or pilose (P-type) in external morphology (stem, leaf, bract, calyx, and corolla). The G-type was found on Ulleung-do and Dok-do. And P-type was observed on coasts of South Korea, Jeju-do and Ulleung-do. The distinct difference of morphological types and geographical distribution suggested existence of putative two lineages with difference of distribution processes. *O. coerulescens*, distributed in very limited areas, was only identified as G-type on Dok-do and that conservation efforts should focus on protecting native habitats to conserve native species and biogeographic significance.

Dr. Ji Young Yang

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Kyungpook National University, Korea
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EDUCATION

- Bachelor Biology (1995.3.-1999.2) Kyungpook National University, Korea
- Master Botany (1999.3.-2001.2) Kyungpook National University, Korea (Master's dissertation: Phylogenetic relationship of Korean *Rubus* L.)
- Doctor Botany (2001.3-2005.8) Kyungpook National University, Korea (Doctor's dissertation**:** **Phylogenentic classification of Korean *Rubus* L.)**

ACADEMIC AND PROFESSIONAL EXPERIENCE:

2016.07-Present	Research Professor, Research Institute for Ulleung-do & Dok-do Island, Kyungpook National University, Daegu, Korea
2013.03-2016.06	Senior Researcher, Sungkyunkwan University, Suwon, Korea
2009.03-2010.10	Postdoctoral Fellow, Yeung-Nam University, Daegu, Korea
2005.09-2009.12	Part-time lecturer, Kyungpook National University, Daegu, Korea
2002.03-2003.02	Teacher (Subject: Biology), Sin-myeong gril's High School, Daegu, Korea

AWARDS:

2008.7.25. Participation Award, Course curriculum portfolio competition, Engineering Education Innovation Center, Kyungpook National University, Daegu, Korea

2016.8.23. Best Poster Award, East Asian Plant Diversity and Conservation 2016, Tokyo, Japan

PEER-REVIEWED PUBLICATIONS:

- Lee, W., **Yang JY**., Jung, K-S., Pak, J-H., Maki, M., and Kim, S-C. Chloroplast DNA assessment of anagenetic speciation in *Rubus takesimensis* (Rosaceae) on Ulleung Island, Korea. Journal of Plant Biology (in press)

- **Yang, JY**., Kim, S.-C**.**, Park, S. J. and Pak, J-H. 2016. Typification and validation of names in Korean *Rubus* (Rosaceae). Novon 25: 114-124.
- **Yang, JY**, Lee, W., Kim, S.-C., and Pak, J.-H. 2015. The taxonomic entity and distribution of *Rubus palmatus* var. *palmatus* and *R. palmatus* and var. *coptophyllus* (Rosaceae) in Korea. Korean Journal of Plant Taxonomy 45: 221-226.
- **Yang JY**, Yoon H-S, Pak J-H 2012. Phylogeny of Korean *Rubus* (Rosaceae) based on the second intron of the LEAFY gene. Canadian Journal of Plant Science 92: 461-472.
- **Yang JY**, Jang SY, Kim H-K, Park S-J 2012. Development of molecular marker to discriminate Korean *Rubus* species medicinal plants based on the nuclear ribosomal DNA internal transcribed spacer and chloroplast trnL/F intergenic region sequences. The Korean society for applied biological chemistry 55: 281-289.
- **Yang JY**, Kim H-K, Park S-J 2011. Development of genetic marker specific for Korean Hwanggi Medicine (Radix Astragali). Food Science Biotechnology 20: 1561-1567
- **Yang JY**, Choi K, Pak J.-H. 2009. A karyotype analysis of Lactuca (Asteraceae) in Korea . Korean Journal of Plant Taxonomy 39: 24-28.
- **Yang JY**, Pak J-H 2006. Phylogeny of Korean *Rubus* (Rosaceae) based on ITS(nrDNA) and trnL/F intergenic region (DNA). Journal of Plant Biology 49: 44-54.
- **Yang JY**, Pak J-H 2005. Cytotaxonomical study of *Rubus* (Rosaceae) in Korea. Korean Journal of Plant Taxonomy 35: 129-142
- **Yang JY**, Ito M., Morita T., Pak, J.H. 2004 Relationship of diploid East Aisan Taraxacum Wiggers using the capitulum morphological character. Korean Journal of Plant Taxonomy 34: 153-166

CONTRIBUTED CONFERENCE AND SYMPOSIUM PRESENTATIONS:

2016. East Asian Plant Diversity and Conservation Symposium. Tokyo, Japan. Aug 23-25. (Poster presentations) Phylogenetic study of *Rubus* (Rosaceae) with special emphasis on subgenus *Idaeobatus*.

2016. 47th The Korean Society of Plant taxonomist symposium, Andong, Korea Feb. 18. Phylogenetic study of *Rubus* (Rosaceae) with special emphasis on subgenus *Idaeobatus* and the origin of *R. takesimensis* in Ulleung Island

2005. 37th The Korean Society of Plant taxonomist symposium, Suwon, Korea, Phylogenetic relationship of Korean *Rubus* L.

2001. The 1st Asian chromosome colloquium, Beijing, China, Phylogenetic relationship of genus *Rubus* L in Korea.

PEER-REVIEWED BOOK CHAPTERS:

- Pak, J.-H., **Yang J.Y.**, Lee D.H., 2009.Flora of Dokdo, Pp.138-167 *in* Natural heritage of Korea, Dokdo. Published by Natural Heritage Division, Cultural Heritage Administration of Korea, Daejeon
- **Yang, J.Y.**, Pak. J.-H. 2007. *Rubus*. Pp. 558--564 *in* C. W. Park (editor), The Genera of Vascular Plants of Korea. Academy Publishing Co., Seoul.

Genetic consequences and anagenetic speciation in *Rubus takesimensis* (Rosaceae) on Ulleung Island, Korea

Ji Young Yang, Woong Lee and, Jae-Hong Pak

[1]Research Institute for Ulleung-do & Dok-do, Kyungpook National University, 80 Daehak-ro, Bukgu, Daegu, 41566, Korea.

Although about 88% or even all endemic species are considered to be anagenetically derived, we are still far from fully understanding the genetic consequences and anagenetic speciation in diverse endemic lineages of vascular plants on Ulleung Island. Of nearly 40 endemics on island, the family Rosaceae includes the most number of endemic species (i.e., *Cotoneaster wilsonii*, *Potentilla dickinsii* var. *glabrata*, *Prunus takesimensis*, *Rubus takesimensis*, and *Spiraea insularis*), yet the genetic diversity and population strucutre of them rarely exist, hampering generalization of anagenetic speciation in endemic species rich lineage. Specifically, comparision between a continental progenitor and an insular derivative pairs is lacking in Rosaceae. In this study, we have chosen one of endemic species *Rubus takesimensis* and compared pattern of genetic diversity and population structure with its continental progenitor species *R. crataegifolius*. We extensively sampled the progenitor-derivative pairs, *R. crataegifolius* (212 accessions from 42 populations in Korea, Japan, and China) and *R. takesimensis* (113 accessions from 15 populations) and sequenced five noncoding regions of chlorplast DNA. We found that island endemic *R. takesimensis* was deeply embedded within the contintntal progenitor *R. crataegifolius*. In addition, several geographically diverse continental populations were responsbile for the origin of *R. takesimensis*; majority of *R. takesimensis* accessions were sister to the clade containing accessions of *R. crataegifolius* primarily from the Korean peninsula, while rare accessions from Dodong and Seok-po shared their common ancestor with the ones from Jeju Island and Japan. There was also an evidence for few accessions from Chusan population originated seperately from the Korean peninsula. Of 129 haplotypes, we found 81 and 48 haplotypes in *R. crataegifolius* and *R. takesimensis*. The AMOVA results showed very little genetic differentiation between the progenitor-derivative pairs and substantial genetic differentiation among populations in insular endemic *R. takesimensis*.

Dr. Juli Caujapé-Castells

Director, Jardin Botnico canario “Viera y Clavijo”-Unidad Asociada al CSIC, Cabildo de Gran Canaria, Spain
(julicaujape@gmail.com)

EDUCATION

- BSc (Biology): Universitat de Barcelona 1988
- PhD (Biology, population genetics): Department of genetics, Universitat de Barcelona, 1995
- Post-Doc: Department of Integrative Biology and Institute of cellular and molecular biology (University of TExas at austin, USA) Dec. 1996-Dec. 1998

PROFESSIONAL EXPERIENCE (SELECTED)

- Scientific head, Dept. of molecular Biodiversity & DNA Bank, Jardín Botánico Canario "Viera y Clavijo" – Unidad Asociada CSIC del Cabildo de Gran Canaria (February 1999-July 2014)
- President, Research panel of the Jardí Botànic Marimurtra of Blanes (Girona). From 2004 to 2009.
- “Ramón y Cajal” researcher at the Cabildo de Gran Canaria (January 2002-January 2007).
- European co-coordinator of project TreeBOL on the molecular ID of the world's trees (Alfred P. Sloan foundation & NY Botanical Garden Bronx, 2006-2009).
- “Research Scholar” post-doctoral, at the “Department of Integrative Biology and Institute of Cellular and Molecular Biology, University of Texas at Austin” (Dec 1996-Dec 1998).
- Researcher (population genetics and biostatistics), Jardí Botànic Marimurtra-Fundació Karl Faust de Blanes, Girona (February 1990-December 1996)

PUBLICATIONS (ONLY LAST 10 YEARS)

Kerbs B, Ressler J, Kelly JK, Mort ME, Santos-Guerra A, Gibson MJS, **Caujapé-Castells J**, Crawford DJ (2016) Postzygotic isolating barriers, phenotypic lines, and transgressive segregation in advanced generation synthetic interspecific hybrids of *Tolpis* (Asteraceae) in the Canary Islands (in prep.).

García-Verdugo C, Mairal M, Monroy P, Sajeva M, **Caujapé-Castells J** (2016) Loss or gain of dispersal ability on islands? Implementing phylogeography to investigate evolution of dispersal traits in *Periploca* (Apocynaceae). *Journal of Biogeography* (submitted).

Cicconardi F, Borges PAV, Strasberg D, Oromí P, López H, Perez-Delgado AJ, Casquet J, **Caujapé-Castells J**, Fernández-Palacios JM, Thébaud C, Emerson BC (2016) MtDNA metagenomics reveals large-scale introductions and high community connectivity for

belowground compared to aboveground arthropods. *Molecular Ecology* (submitted).

Soto ME, Marrero Á, Roca-Salinas A, Bramwell D, **Caujapé-Castells J** (2016) Conservation implications of high population genetic variation in two closely related and highly threatened species of *Crambe* (Brassicaceae) endemic to the island of Gran Canaria: *C. tamadabensis* and *C. pritzelii*. *Botanical Journal of the Linnean Society* 182: 152−168.

Jiménez A, Weigelt B, Santos-Guerra A, **Caujapé-Castells J**, Fernández-Palacios JM, Conti E (2016) Surviving in isolation: genetic variation, bottlenecks and reproductive strategies in the Canarian endemic *Limonium macrophyllum* (Plumbaginaceae). *Genetica* (submitted).

Borges PAV, Cardoso P, Rigal F, Fattorini S, Rego C, Amorim IR, Elias RB, Pereira F, Nunes R, Carvalho R, Florencio M, Ferreira MT, López H, Oromí P, Pérez AJ, Fernández-Palacios JM, Otto R, Fernández Lugo S, de Nascimento L, **Caujapé-Castells J**, Sadeyen AM, Thébaud C, Strasberg D, Emerson BC (2016) Emergent properties in island species community assembly: testing assembly rules in temperate vs tropical islands. *Journal of Biogeography* (sometido).

Marrero Á, Navarro B, **Caujapé-Castells J** (2015) Observaciones taxonómicas y corológicas sobre "Las plantas suculentas" y "Los subarbustos". En: Kunkel G. y Kunkel MA, *Flora de Gran Canaria, Volumen 2, Las plantas suculentas-Los subarbustos*. Ediciones del Cabildo de Gran Canaria, Las Palmas de Gran Canaria. Pp. 11.

Marrero Á, Navarro B, **Caujapé-Castells J** (2015) Observaciones taxonómicas y corológicas sobre "Árboles y arbustos arbóreos" y "Enredaderas, trepadoras y rastreras". En: Kunkel G. y Kunkel MA, *Flora de Gran Canaria, Volumen 1, Árboles y arbustos arbóreos-Enredaderas, trepadoras y rastreras*. Ediciones del Cabildo de Gran Canaria, Las Palmas de Gran Canaria. Pp. 11.

Romeiras M, Catarino S, Gomes I, Fernandes C, Costa JC, **Caujapé-Castells J**, Duarte MC (2016) IUCN Red List assessment of the Cape Verde endemic flora: towards to a Global Strategy for Plant Conservation within Macaronesia. *Botanical Journal of the Linnean Society* 180: 413−425.

Ojeda Alayon D, Jaén Molina R, Santos-Guerra A, **Caujapé-Castells J**, Cronk Q (2016) Temporal, but not spatial, changes in expression patterns of petal identity genes are associated with loss of papillose conical cells and the shift to bird pollination in Macaronesian *Lotus* (Leguminosae). *Plant Biology* (in press).

Mort ME, Crawford DJ, Kelly JK, Santos-Guerra A, Menezes de Sequeira M, Moura M, **Caujapé-Castells J** (2014) Multiplexed-Shotgun-Genotyping data resolve phylogeny within a very recently-derived insular lineage. *American Journal of Botany* 102: 634-641.

Caujapé-Castells J, Jaén-Molina R, García-Verdugo de Lucas C, Olangua-Corral M, de la Cruz S, González-Pérez MA (2014) Los datos moleculares y la conservación de la diversidad vegetal del territorio de la Reserva de la Biosfera de Gran Canaria. Pp. 18-23 In: Las plantas más interesantes de la Reserva de la Biosfera de Gran Canaria. Cátedra UNESCO-Unitwin para la conservación de la biodiversidad vegetal en Macaronesia y el Oeste de África, Consejería de Medio Ambiente y Emergencias (Cabildo de Gran Canaria).

Caujapé-Castells J (2014) Gran Canaria Biosphere Reserve: implementing sustainability through citizenship participation, information society, and science-based biodiversity management. Best practices of island and coastal biosphere reserves. Proceedings of the 3rd meeting of the world network of island and coastal biosphere reserves. Palawan (Philippines) 16-21 June 2014 (in press).

Jones KE, Pérez-Espona S, Reyes-Betancort JA, Pattinson D, **Caujapé-Castells J**, Hiscock SJ, Carine MA (2014) Why do different oceanic archipelagos harbour contrasting levels of species diversity? The Macaronesian endemic genus *Pericallis* (Asteraceae) provides insight into explaining the 'Azores Diversity Enigma'. *BMC Evolutionary Biology* 16: 202 (15 páginas).

García-Verdugo C, Sajeva M, La Mantia T, Harrouni C, Msanda F, **Caujapé-Castells J** (2014) Do island plant populations really have lower genetic variation than mainland populations? Effects of selection and distribution range on genetic diversity estimates. *Molecular Ecology* 24: 726-741.

Marrero-Rodríguez Á, Naranjo-Suárez J, **Caujapé-Castells J** (2014) *Rubus palmensis* A. Hansen (Rosaceae), nueva cita para la flora vasculardel Parque Nacional Garajonay en La Gomera, Islas Canarias. *Botánica Macaronésica* 28: 159-164.

Jaén-Molina R, Marrero-Rodríguez A, Reyes-Betancort A, Santos-Guerra A, Naranjo-Suárez A, **Caujapé-Castells J** (2014) Molecular taxonomic identification in the absence of a "barcoding gap": a test with the endemic flora of the Canarian oceanic hotspot. *Molecular Ecology Resources* 15: 42−56.

Fernández Palacios JM, Oromí P, Pérez AJ, **Caujapé-Castells J**, Emerson B (2014) Un paseo por la isla de La Reunión. *Makaronesia* 16: 26-51.

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RESEARCH PROJECTS (LAST 10 YEARS)

Project title: ISLAND-PALECO: Tracking past human impact on islands improving palaeoecological reconstructions with PalEnDNA analysis
Funding agency: Marie Slodowska Curie Actions (European Union)
Principal Investigator: Lea de Nascimento
Participating Institutions: Universidad de la Laguna, **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Landcare research NZ Ltd.
Since: 2016 **to**: 2019
Number of participating researchers in Gran Canaria: 2

Project title:
Funding agency: FECYT
Principal Investigator: Eduardo Actis
Participating Institutions: Unidad de Comunicación Científica (CSIC), **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Real Jardín Botánico de Madrid-CSIC (Dpto. de divulgación)
Since: 2016 **to**: 2017 **Amount funded**: 31.500 Euros

Number of participating researchers: 9

Project title: ISLAND-BIODIV: Understanding biodiversity dynamics in tropical and subtropical islands as an aid to science based conservation action.
Funding agency: Netbiome joint call (European Union)
Principal Investigator: Brent Emerson (IPNA-CSIC)
Principal Investigator of the sub-project in Gran Canaria: **Juli Caujapé Castells**
Participating Institutions: IPNA-CSIC (Tenerife), Universidad de la Laguna, Université de Lá Reunion, Université Paul Sabatier (Narbonne), Universidade dos Azores, **Jardín Botánico "Viera y Clavijo"-UA CSIC**.
Since: 2012 **to**: 2014**Amount funded**: 67.000 Euros
Number of participating researchers in Gran Canaria: 2

Project title: ENCLAVES II: Floristic links between the Canaries and the mainland "Macaronesian enclave" in Morocco (Ampliación y refuerzo)
Funding agency: Programa Cooperación Transfronteriza (España-Fronteras Exteriores)
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Institut Ágronomique et Vétérinaire Hassan II (Agadir, Morocco), Université Ibn Zohr (Agadir, Morocco)
Since: 2013 **to**: 2015 **Amount funded**: 259.644,02 Euros
Number of participating researchers: 7

Project title:
Funding agency: Ministerio de Agricultura, Alimentación y Medio Ambiente
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Fundación Canaria Amurga-Maspalomas.
Since: 2010 **to**: 2012 **Amount funded**: 166.083 Euros
Number of participating researchers: 14

Project title: INSULARITIES: Genetic structure of plant endemisation on continental and oceanic islands of the Mediterranean hotspot (CGL 2010-22347-C02-02)
Funding agency: Ministerio de Ciencia e Innovación (Plan Nacional de I+D+i)
Principal Investigator: Josep A. Rosselló Picornell
Principal Investigator of the sub-project in the Canaries: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Universitat de València, Jardí Botànic Marimurtra (Blanes), Natural History Museum London
Since: 2010 **to**: 2013 **Amount funded**: 116.000 Euros
Number of participating researchers: 5

Project title: ENCLAVES: Floristic links between the Canaries and the mainland "Macaronesian enclave" in Morocco
Funding agency: Programa Cooperación Transfronteriza (España-Fronteras Exteriores)
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Institut Ágronomique et Vétérinaire Hassan II (Agadir, Morocco), Université Ibn Zohr (Agadir, Morocco)
Since: 2010 **to**: 2013 **Amount funded**: 533.411,47 Euros
Number of participating researchers: 7

Project title: Vicariance and the evolution of insular floras
Funding agency: The Royal Society of London
Principal Investigator: Mark A. Carine
Participating Institutions: Natural History Museum (London), **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Jardín de Aclimatación de La Orotava
Since: 2009 **to**: 2012**Amount funded**: 10.036 £
Number of participating researchers: 4

Project title: Molecular identification of the Canarian endemic trees: a step towards estimating the phylogenetic signal in the Canarian Flora (arBOL-Can)
Funding Agency: Agencia Canaria de Investigación, Innovación y Sociedad de la Información (Gobierno de Canarias)
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**

Since: 2009 **to**: 2012 **Amount funded**: 42.000 Euros
Number of participating researchers: 4

Project title: Grupo de investigación consolidado sobre "Biologia evolutiva de plantes Mediterrànies"
Funding Agency: Generalitat de Catalunya
Principal Investigator: María Mayol
Participating Institutions: CREAF, Jardí Botánic Marimurtra, CIFOR-INIA, Universitat de València, **Jardín Botánico "Viera y Clavijo"-UA CSIC**
Since: 2009 **to**: 2012 **Amount funded**: 57.200 Euros
Number of participating researchers: > 20

Project title: DEMIURGO: Population genetic information banks and meta-analysis of the Macaronesian Flora
Funding Agency: Programa de Cooperación Transnacional Madeira-Açores-Canarias
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Universidade dos Açores en Ponta Delgada, Universidad de Las Palmas de Gran Canaria, Instituto Tecnológico de Canarias
Since: 2009 **to**: 2012 **Amount funded**: 814.377,87 Euros
Number of participating researchers: > 20

Project title: BIOCLIMAC: Biotechnology and plant conservation in the face of climate change
Funding Agency: Programa de Cooperación Transnacional Madeira-Açores-Canarias
Principal Investigator: Alicia Roca Salinas
Participating Institutions: **Jardín Botánico "Viera y Clavijo"-UA CSIC**, Jardím Botánico da Madeira, Associação para o Desenvolvimento Local de Ilhas dos Açores
Since: 2009 **to**: 2012 **Amount funded**: 956.117,00 Euros
Number of participating researchers: > 10

Project title: Reunión internacional de expertos para implementar una base de datos moleculares poblacionales sobre la diversidad biológica dentro del marco del GBIF
Funding Agency: Ministerio de Educación y Ciencia (acciones complementarias)
Principal Investigator: Juli Caujapé Castells
Participating Institutions: **Jardín Botánico "Viera y Clavijo".**
Since: 2007 **to**: 2007 **Amount funded**: 12.000 Euros
Number of participating researchers: unos 20

Project title: La flora endémica del parque nacional de Garajonay bajo la perspectiva molecular: el código de barras molecular como herramienta taxonómica
Funding Agency: Red de Parques Nacionales, Ministerio de Medio Ambiente
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"**, Universidad de La Laguna, Jardín de Aclimatación de La Orotava, Universidad de Murcia
Since: 2006 **to**: 2008 **Amount funded**: 126.381,48 euros
Number of participating researchers: 10

Project title: CAVEGEN (Conservación de los recursos genéticos de Cabo Verde)
Funding Agency: Comisión Europea (Interreg IIIB)
Principal Investigator: **Juli Caujapé-Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"**, Instituto de Investigación y Desarrolla Agrario de Cabo Verde.
Since: 2005 **to**: 2007 **Amount funded**: 235.294 euros
Number of participating researchers: más de 10

Project title: Evolución de la endemicidad incipiente en Macaronesia: el modelo de *Matthiola*
Funding Agency: Gobierno de Canarias
Principal Investigator: **Juli Caujapé Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"**, Universidad de La Laguna
Since: 2004 **to**: 2007 **Amount funded**: 30.452,07 Euros

Number of participating researchers: 3

Project title: BIOMABANC (Red de bancos de Biodiversidad de la Flora Macaronésica)
Funding Agency: Comisión Europea (Interreg IIIB)
Principal Investigator: **Juli Caujapé-Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"**, ULPGC, Jardín Botánico de Madeira, Jardín Botánico de Açores, Universidad de Açores.
Tipo de participación: Investigador principal y coordinador
Since: 2004 **to**: 2006 **Amount funded**: 1.120.646,59 euros
Number of participating researchers: >20

Project title: Origen y diversificación de las Matthioleae (Brassicaceae) Macaronésicas. Implicaciones para la conservación (REN/2003-07592/GLO)
Funding Agency: Ministerio de Ciencia y Tecnología (Plan Nacional de I+D+i)
Principal Investigator: **Juli Caujapé-Castells**
Participating Institutions: **Jardín Botánico "Viera y Clavijo"**
Tipo de participación: Investigador principal
Since: 2003 **to**: 2006 **Amount funded**: 59.000 euros
Number of participating researchers: 5

INVIDED LECTURES (LAST 5 YEARS)

Evolution, genetic diversity and Conservation of the Canarian flora
5 talks at the International course of Island Conservation. University of Hainan at Haikou (China), 10-18 November 2016

Oceanic island plant conservation in a changing world: lagging or leading?
Plenary talk, July 18th,International Conference on Island Evolution, Ecology, and Conservation University of the Azores at Angra do Heroísmo, Terceira Island, Azores, Portugal, 18-22 July 2016

Endemismos del pasado, endemismos del presente, endemismos del futuro
April 6th, XIV Congreso de la Asociación Ibero-Macaronésica de Jardines Botánicos, Oasis Park Fuerteventura.

Belerofonte resucitado: los sistemas de información genética y sus previsibles contribuciones a la gestión de la biodiversidad insular
October 25th, Keynote invited lecture at the "Séptimas

Bridging the gap between population genetics and conservation practice: science facts or science fiction?
July 7th 2015, "Science" keynote invited lecture at the Muséum National d'Histoire Naturelle de París (France), during the "EuroGard VII" congress.

La Reserva de la Biosfera de Gran Canaria
16 de diciembre de 2014, Universidad Nacional de Educación a distancia, Las Palmas de Gran Canaria

Using phylogenetic diversity as a baseline indicator to propose conservation priorities for the flora in the Biosphere Reserve of Gran Canaria
June 6th 2013, Lecture at the "3rd meeting of the Global Network of Island and Coastal Biosphere Reserves", Hiiumaa (Estonia)

Accediendo a la invisibilidad para entender la realidad
November 16th 2012, Lecture at the "TED x Canarias" event, Museo Néstor (Las Palmas de Gran Canaria)

The phylogenetic diversity of the endemic flora in the Biosphere Reserve of Gran Canaria: first results, future prospects
September 12th 2012, Lecture at the "2nd meeting of the Global Network of Island and Coastal Biosphere Reserves", Jeju-do (SouthKorea)

The genetic diversity discontinuity in the Canarian flora: possible origins, links, and consequences
September 6th 2012, Keystone Lecture at the"Floramac 2012 conference", Madeira (Portugal)

Construing the genetic diversity patterns in the Canarian flora
July 11th 2012, Keystone lecture at the Symposium "Evolution on Islands: a colloquium to honor the careers of Daniel Crawford and Tod Stuessy" Botanical Society of America meeting 2012, Columbus, Ohio(USA)

Botes, bytes, bates i corbates: la integració del coneixement com a eina per a avaluar i conservar la flora
June 14th 2012, Keystone lecture at the "III Jornades de Conservació de Flora", Lleida (Spain)

Phylogeographic stories and conservation of Canarian endemic trees: insights from genetic data and DNA banking
April 20th2012, Keystone lecture at the International conference "Store, certify and exchange - the role of biobanks for research and protection of forest biodiversity", Viterbo (Italy)

El impacto de la biología molecular en los estudios de la flora canaria
April 17th 2012, Keystone lecture at the "Ciclo de conferencias de la Cátedra UNESCO para la conservación de la biodiversidad vegetal en Macaronesia y el Oeste de África", Gabinete Literario de Las Palmas (Spain).

Botas, batas, bytes y corbatas: realidades y necesidades para la gestión del conocimiento sobre la diversidad genética de la biodiversidad
November 30th 2011, Keystone lecture at the Oportunidades, Necesidades y Experiencias en el campo de la Informática aplicada a la conservación de la Biodiversidad"

La hipótesis del singameón surfista y la diversidad genética de la flora canaria
October 17th 2011, IV Maratón Científico, Real Jardín Botánico de Madrid-CSIC, Madrid (Spain)

Análisis de la variabilidad genética de las poblaciones en un contexto de cambio global
October 7th 2011, Keystone lecture at the "Reunión científica Bancos de Germoplasma: reservorios de biodiversidad", León (Spain)

La información húmeda, la información a secas, y la conservación del conocimiento necesario para la conservación de la biodiversidad: ejemplos insulares, implicaciones globales
30th September 2011, Keystone lecture at the Vthcongressofthe"*Sociedad Española de Biología de la Conservación de Plantas*", Universitat de les Illes Balears (Es Mercadal, Menorca, Spain)

El sistema de información T4-Demiurge, hacia un estándar para datos genéticos poblacionales (with Izzat Sabbagh Rodríguez)
14th July 2011. I Encuentro Nacional de Conservación Genética en Plantas (Las Palmas de Gran Canaria, Spain)

The surfing syngameon hypothesis: implications for the genetic and taxonomic diversities of the present Canarian flora
16 March 2011, Keystone lecture at the "Fundación Amurga International conferences on Island Biodiversity", Gabinete Literario de Las Palmas (Spain)

TALKS IN SYMPOSIA (LAST 5 YEARS)

- **Caujapé-Castells J** (2016) Oceanic island plant conservation in a changing world: lagging or leading? Pp. 223 in: R. Gabriel, R.B. Elias, I.R. Amorim & P.A.V. Borges (Eds). Conference program and abstracts of the 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal. Arquipelago. *Life and Marine Sciences*, *Supplement 9*.
- Mort ME, Archibald JK, Gibson MJS, Bontrager H, Hauber DP, Borges Silva L, Sequeira MM, Moura M, Santos-Guerra A, Kelly JK, Gruenstaeudl M, **Caujapé-Castells J**, Crawford DJ (2016) The utility of Multiplexed-Shotgun-Genotyping (MSG) for resolving phylogenetic relationships within and among oceanic archipelagos: An example from Macaronesian *Tolpis* (Asteraceae). Pp. 235-236 in: R. Gabriel, R.B. Elias, I.R. Amorim & P.A.V. Borges (Eds). Conference program and abstracts of the 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal. Arquipelago. Life and Marine Sciences. Supplement 9.

- Emerson BE, López H, Perez-Delgado A, Oromí P, Fernández-Palacios JM, **Caujapé-Castells J**, Cardoso P, Strasberg D, Thébaud C, Borges, PAV (2016) An ecological and evolutionary framework for the analysis of insular biomes. Pp. 355 in: R. Gabriel, R.B. Elias, I.R. Amorim & P.A.V. Borges (Eds). Conference program and abstracts of the 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal. Arquipelago. Life and Marine Sciences. Supplement 9.
- Mort ME, Archibald JK, Gibson MJS, Bontrager H, Hauber DP, Silva LB, Sequeira MM, Moura M, Santos-Guerra A, Kelly JK, Gruenstaeudl M, **Caujapé-Castells J**, Crawford, DJ (2016) Analyses of Multiplexed-Shotgun-Genotyping (MSG) data reveal cryptic biodiversity in Macaronesian Tolpis. Pp. 380-381 in: R. Gabriel, R.B. Elias, I.R. Amorim & P.A.V. Borges (Eds). Conference program and abstracts of the 2nd International Conference on Island Evolution, Ecology and Conservation: Island Biology 2016, 18-22 July 2016, Angra do Heroísmo, Azores, Portugal. Arquipelago. Life and Marine Sciences. Supplement 9.
- Thiv M, Kondraskov P, Schüßler C, Schütz N, Menezes de Sequeira M, Santos Guerra A, **Caujapé-Castells J**, Jaén-Molina R, Marrero-Rodríguez A, Koch MA, Linder P, Kovar-Eder J (2015) The complex evolution of Macaronesian laurisilva - new insights from molecular phylogenetics. In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 March 2015, Pp. 16.
- Jaén Molina R, Marrero A, Medina FM, Mesa Coello R, **Caujapé Castells J** (2015) Detection of possible "cryptic" taxa in *Dorycnium* sect. *canaria* for the canary islands In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 march 2015, Pp. 18.
- **Caujapé Castells J** (2015) From multi-disciplinary science to conservation practice. A missing link? In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 March 2015, Pp. 19.
- Romeiras MM, Duarte MC, Monteiro F, Moura M, **Caujapé-Castells J**, Schaefer H, Carine MA (2015) addressing biodiversity knowledge gaps within the Macaronesian biodiversity hotspot: a phylogenetic and ecological approach to study the Cape Verde flora In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 March 2015, Pp. 20.
- Fernández-Palacios O, Febles R, **Caujapé-Castells J**, Pérez de Paz J (2015) *Parolinia* Webb (Brassicaceae) "las damas canarias", biodiversidad y biología reproductiva. Aplicaciones a la conservación In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 March 2015, Pp. 26.
- Fernández-Palacios JM, Price JP, Otto R, Sequeira M, Schaefer H, **Caujapé-Castells J**, Kueffer C (2015) Colonisation and diversification shape species-area relationships in three Macaronesian archipelagoes. In: Proceedings of Floramac 2015, Las Palmas de Gran Canaria 23-27 March 2015, Pp.31.
- García-Verdugo C, Harrouni C, Msanda F, Marrero Á, **Caujapé-Castells J** (2014) Using molecular markers to investigate lineage differentiation within widespread island taxa. Pp. 9 in *Proceedings of the 3rd Sciencein Botanic Gardens Congress*, Las Palmas de Gran Canaria 1-4 April 2014.
- Jaén-Molina R, Garcia-Verdugo de Lucas C, Olangua-Corral M, de la Cruz S, **Caujapé-Castells J** (2014) The Phylogenetic Diversity as a tool to contribute to the management and conservation of the flora from the Biosphere Reserve of Gran Canaria. Pp. 11 in *Proceedings of the 3rd Sciencein Botanic Gardens Congress*, Las Palmas de Gran Canaria 1-4 April 2014.
- González-Perez MA, Harrouni C, Msanda F, Marrero A, Medina FM, **Caujapé-Castells J** (2014) The genetic relationship among the Canary Islands and the "continental Macaronesian enclave" seen through genetic data of *Androcymbium* species (Colchicaceae). Pp. 12 in *Proceedings of the 3rd Sciencein Botanic Gardens Congress*, Las Palmas de Gran Canaria 1-4 April 2014.
- **Caujapé-Castells J** (2014) When Harry met Sally: the eventful shared trip of multi-disciplinary science and conservation practice to complement each other. Pp. 13 in *Proceedings of the 3rd Sciencein Botanic Gardens Congress*, Las Palmas de Gran Canaria 1-4 April 2014.
- Jaén-Molina R, García-Verdugo C, de la Cruz S, Olangua M, **Caujapé-Castells J** (2013) La Diversidad Filogenética: un instrumento de conservación y gestión de la flora de la

Reserva de la Biosfera de Gran Canaria. VI Congreso de biología de la conservación de plantas. Murcia 15-18 October 2013.

- González-Pérez MA, **Caujapé-Castells J** (2013) El género *Androcymbium* como modelo de diversidad y relación genética entre Canarias y el norte de África. VI Congreso de biología de la conservación de plantas. Murcia 15-18 October 2013.
- García-Verdugo C, González-Pérez MA, **Caujapé-Castells J** (2013) La clonalidad en plantas de islas oceánicas: consideraciones ecológicas y evolutivas e implicaciones en estrategias de conservación. VI Congreso de biología de la conservación de plantas. Murcia 15-18 October 2013.
- Jaén-Molina R, Marrero Á, Fernández-Palacios JM, Franc A, Roca A, **Caujapé-Castells J** (2011) La caracterización molecular de los árboles endémicos canarios como base para la estimación de la Diversidad Filogenética de la Flora Canaria. V Congreso de biología de la conservación de plantas. Es Mercadal (Menorca) 28 September-1 October 2011.
- Soto M, Jaén R, Marrero-Rodríguez Á, **Caujapé-Castells J** (2011) Filogeografía y conservación de endemismos insulares canarios amenazados del género *Ruta* (Rutaceae). V Congreso de biología de la conservación de plantas. Es Mercadal (Menorca) 28 September-1 October 2011.
- Sosa PA, González-Pérez MA, **Caujapé-Castells J**, Catalán P, Robledo-Arnuncio JJ (2011) Resultados y conclusiones del I Encuentro Nacional de Conservación Genética en Plantas. V Congreso de biología de la conservación de plantas. Es Mercadal (Menorca) 28 September-1 October 2011.
- Meloni M, Reid A, **Caujapé-Castells J**, Fernández-Palacios JM, Soto Medina M, Conti E (2011) Are island endemics characterized by low levels of genetic diversity? A case study from the Canary Islands. International Botanical Congress, Melbourne (Australia), 23-30 July 2011.

HONORS

- Member, Scientific Committee, V Congreso de Biología de la Conservación de Plantas (Menorca, Es Mercadal), 28 September 1 Ooctober 2011
- President, Scientific Committee, Fundación Amurga International conferences on Island Biodiversity 2011 (Las Palmas de Gran Canaria)
- European co-chair (with Dr. Felix Forest), Tree-BOL Project, Alfred P. Sloan Foundation & The New York Botanical Garden (USA), 2008 to 2010
- Delegate, Grupo Consultivo del Plan Nacional de Poblaciones Amenazadas, Ministerio de Medio Ambiente, since 2007
- Delegate, Plant Conservation and Climate Change Committee, Botanic Gardens Conservation International (BGCI), Grupo de Gran Canaria, since 2006
- Award of "Trayectoria investigadora internacional destacada sobre la calidad y actividad científico-tecnológica desarrollada", Ministry of Science and Technology, December 19th 2005
- President, Scientific Committee, Fundació Karl Faust – Jardí Botánic Marimurtra (Blanes, Girona, Spain), since 2004
- Member of 28 PhD committees in Spain and Portugal (since 2002) Juli Caujapé-Castells: abbreviated CV 13 of 13

OTHER PROFESSIONAL ACTIVITIES

- Reviewer for > 10 regional, national and international research agencies.
- Reviewer for impact journals on plant biogeography, phylogenetics, population genetics and conservation (e. g., American Journal of Botany, Biochemical Systematics and Ecology, Taxon, Journal of Biogeography, Molecular Phylogenetics and Evolution, Molecular

Ecology, Plant Systematics and Evolution, Institut Català d'Història Natural, Canadian Journal of Botany, Botanical Journal of the Linnean Society, Botany,...)

- >30 invited lectures in Europe, Africa, Asia and the USA on phylogenetics, population genetics or conservation of insular plants.
- Directed 4 PhDs, presently co-directing 2 PhDs.

Island ontogeny and the origins of genetic diversity in the Canarian flora

Juli Caujapé-Castells (julicaujape@gmail.com)

Director, Jardin Botánico canario "Viera y Clavijo"-Unidad Asociada al CSIC, Cabildo de Gran Canaria

The lecture will set forth a hypothetical framework that refines and updates the Surfing Syngameon Hypothesis (SSH) to explain the origins of the high genetic diversity of this flora in connection with the Dynamic Theory of Island Ontogeny (DTIO). Under this framework, the colonizing contingents of the islands would not necessarily have low genetic variation, because multiple colonizations followed by secondary contact among different genotypes would enhance genetic diversity though introgressive hybridization. Similarly to other theories, the SSH contends that the monophyly detected in a large proportion of its lineages is artifactual. However, the SSH further differs from any other past hypotheses in (i) suggesting a spatio-temporal sequence of events giving rise to syngameons in different islands and island regions, (ii) showing that the ontogenetic mismatch among the Canarian islands should be largely responsible for similar levels of population genetic diversity in many congeneric SIE and MIE distributed in several islands, (iii) revealing a substantial role of both allopolyploid and homoploid hybridization in the origins of the Canarian flora ,and (iv) positing that the ontogenetic stage of an oceanic island influences the levels and distribution of population genetic diversity in the biota that it hosts.

Dr. Patricio Gerardo López-Sepúlveda

Universidad de Concepción, Chile
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EDUCATION AND DEGREES AWARDED

2013–Actual Assistant Professor, Dept. of Botany, University of Concepción, Concepción, Chile.

2011–2012 Postdoctoral Research Fellow. Department of Systematic and Evolutionary Botany, Biodiversity Center. University of Vienna, Vienna, Austria.

2010 Doktor der Naturwissenschaften. University of Vienna, Vienna, Austria.

2007–2010 Doctoral Research Fellow. Thesis "Genetic diversity, speciation and evolutionary relationships in *Pozoa* (Apiaceae), *Nassauvia*, and the *Hypochaeris apargioides* complex (Asteraceae) in southern South America"

1988 Biologist. Facultad de Ciencias Naturales y Oceanográficas. University of Concepción, Concepción, Chile.

FIELD WORK (ORGANIZATION AND/OR INVESTIGATION)

2015. Juan Fernández Archipelago. University of Concepción (Chile), Tokyo Metropolitan University, University of Tokyo and Chuo University (Japan).

2015. Blooms desert, north of Chile. Different Institution of Japan.

2014. Ogasawara Island, Japon.

2011. January-February. Juan Fernandez Archipelago, Chile. Project "Plant evolution in the Robinson Crusoe Island". University of Vienna, Austria. FWF support, N° P21723-B16.

2010. January-February. Juan Fernandez Archipelago, Chile. Project "Plant evolution in the Robinson Crusoe Island". University of Vienna, Austria. FWF support, N° P21723-B16.

2008. January-February. Chile-Argentina. Project "Evolution of genus *Hypochaeris* (Asteraceae) in Southamerica". University of Vienna, Austria. FWF support, N° P18446-B03.

2007. January-February. Chile. Project "Evolution of genus *Hypochaeris* (Asteraceae) in Southamerica". University of Vienna, Austria. FWF support, N° P18446-B03.

2005. October. Chile. "The vegetation in Termas de Chillán, Radal Siete Tazas National Reserve and Nahuelbuta National Park". California State Language and Culture Program-University of Concepción.

2004. November. Chile. "The vegetation of Termas de Chillán, Ralco National Reserve and Nahuelbuta National Park". California State Language and Culture Program-University of Concepción. "The vegetation in Chillan Mountains". St. Cloud University-University of Concepción.

2003. December. Chile, "The vegetation of Termas de Chillán and Nahuelbuta National Park". St. Cloud University (USA)-Universty of Concepción and California State Language and Culture Program (USA)-University of Concepción.

2002. November. Chile, "Vegetation in Nevados of Chillán and Nahuelbuta National Park". St. Cloud University (USA)-University of Concepción.

2001. November. Chile, "Vegetation of Nevados de Chillán". St. Cloud University (USA)-University of Concepción.

2001. October. Chile, "Vegetation of Chiloé Island". University of Concepción.

2001. January. Chile, "Ornamental Plants of the Bío-Bío Region", Anglatin Co.

2000. November. Chile, "Wildlife protected areas of National Park Nahuelbuta", University of Concepción.

2000. February. Chile, Project "Vegetational map and analysis of the flora of Juan Fernández Island". University of Concepción (Chile) and University of Vienna (Austria), support by National Geographic Society.

1999. January-February. Chile, Project "Study and preliminary valorization of phytosociological methodology in Juan Fernandez Island". University of Concepción (Chile) and University of Vienna (Austria), support by National Geographic Society.

1996. January. Chile, Project "Reproductive biology in endemic species of Juan Fernandez Island". University of Concepción (Chile), University of Connecticut (USA) and Multidisciplinary Institute of Plant Biology (Argentina).

1991. January-February. Chile, Project "Collection and study of the flora of Juan Fernández Island". University of Concepción (Chile) and Ohio State University (USA).

1990. January-February. Chile, Project "Collection and study of the flora of Juan Fernández Island". University of Concepción (Chile) and Ohio State University (USA).

PAPERS:

- **López-Sepúlveda, P.,** Takayama, K., Crawford, D.J., Greimler, J., Peñailillo, P., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J. & Stuessy, T.F. 2016. Biogeography and genetic consequences of anagenetic speciation of *Rhaphithamnus venustus* (Verbenaceae) in the Juan Fernández archipelago, Chile: insights from AFLP and SSR markers. Plant Species Biology. doi: 10.1111/1442-1984. 12144.
- **López-Sepúlveda, P.**, Takayama, K., Greimler, J., Crawford, D.J., Peñailillo, P., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J. & Stuessy, T.F. 2015. Speciation and biogeography of *Erigeron* (Asteraceae) in the Juan Fernández Archipelago, Chile, based on AFLPs and SSRs. Systematic Botany 2015 40(3): 888-899. doi: http://dx.doi.org/10.1600/036364415X689311.
- Takayama, K., **López-Sepúlveda, P.**, Greimler, J., Crawford, D.J., Peñailillo, P., Baeza, M., Ruiz, E, Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J. & Stuessy, T.F. 2015. Relationships and genetic consequences of contrasting modes of speciation among endemic species of *Robinsonia* (Asteraceae, Senecioneae) of the Juan Fernández Archipelago, Chile, based on AFLPs and SSRs. New Phytologist 205: 415-428. http://dx.doi.org/10.1111/nph.13000
- **López-Sepúlveda, P.**, Takayama, K., Greimler, J., Crawford, D.J., Peñailillo, P., Baeza, M., Ruiz, E., Kolh, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J. & Stuessy, T.F. 2015. Progressive migration and anagenesis in *Drimys confertifolia* of the

Juan Fernández Archipelago, Chile. Journal of Plant Research 128: 73-90. http://dx.doi.org/10.1007/s10265-014-0666-7

- Stuessy, T.F., Takayama, K., **López-Sepúlveda, P.** & Crawford, D.J. 2014. Interpretation of patterns of genetic variation in endemic plant species of oceanic islands. Botanical Journal of the Linnean Society 174: 276-288. doi: 10.1111/boj.12088.
- Stuessy, T.F, König, C. & **López Sepúlveda, P.** 2014. Paraphyly and endemic genera of Oceanic Islands: implications for conservation. Annals Missouri Botanical Garden 100: 50-78. doi: http://dx.doi.org/10.3417/2012087
- Fuentealba-Sandoval, V., Finot, V.L., Wilckens, R. & **López-Sepúlveda, P.** 2014. Efectos de la disminución de temperatura sobre el desarrollo de la pared de la antera y el grano de polen en *Oryza sativa* L. Gayana Botánica 71 (2): 199-215. http://dx.doi.org/10.4067/S0717-66432014000200003.
- Baeza, C., Bastías, C., Stuessy, T., Ruiz, E., Greimler, J., **López-Sepúlveda, P.**, Peñailillo, P., Novoa, P. & Gatica, A. 2013. Cytological investigations on populations of *Taraxacum* (Asteraceae) from the Juan Fernandez Archipelago, Chile. Gayana Botánica 70(2): 401-403. http://dx.doi.org/10.4067/S0717-66432013000200019.
- Takayama, K., **López-Sepúlveda, P.**, Kohl, G., Novak, J. & Stuessy, T.F. 2013. Development of microsatellite markers in *Robinsonia* (Asteraceae) an endemic genus of the Juan Fernández Archipelago, Chile. Conservation Genetic Resources 5: 63-67. DOI/URL: http://dx.doi.org/10.1007/s12686-012-9734-2
- **López-Sepúlveda, P.**, Takayama, K., Greimler, J., Peñailillo, P., Crawford, D.J., Baeza, M., Ruiz, E., Kohl, G., Tremetsberger, K., Gatica, A., Letelier, L., Novoa, P., Novak, J. & Stuessy, T.F. 2013. Genetic variation (AFLPs and nuclear microsatellites) in two anagenetically derived endemic species of *Myrceugenia* (Myrtaceae) on the Juan Fernández islands, Chile. American Journal of Botany 10: 1-13. DOI/URL: http://dx.doi.org/10.3732/ajb.1200541
- **López-Sepúlveda, P.**, Tremetsberger, K., Órtiz, M.A., Baeza, M., Peñailillo, P. & Stuessy, T.F. 2013. Radiation of the *Hypochaeris apargioides* complex (Asteraceae: Cichorieae) of southern South America. Taxon 62: 550-564.
- Greimler, J., **López-Sepúlveda, P.**, Reiter, K., Baeza, C., Peñailillo, P., Ruiz, E., Novoa, P., Gatica, A. & Stuessy, T.F. 2013. The vegetation of Alejandro Selkirk Island (Isla Masafuera), Juan Fernández Archipelago, Chile. Pacific Science 67: 267-282.
- Takayama, K., **López Sepúlveda, P.**, Kohl, G., Novak, J. & Stuessy, T.F. 2012. Development of microsatellite markers in species of *Erigeron* (Asteraceae) endemic to the Juan Fernández Archipelago, Chile. American Journal of Botany Primer Notes & Protocols in the Plant Science e487-e489. DOI/URL: http://dx.doi.org/10.3732/ajb.1200218
- Stuessy, T.F., Takajama, K. & **López Sepúlveda, P.** 2012. Founder effects are invisible in endemic species of ocean islands. Journal of Biogeography 39: 1565-1566. DOI/URL: http://dx.doi.org/10.1111/j.1365-2699.2012.02768.x
- Green, E.C., Tremetsberger, K., Jiménez, A., Gómez-González, S., Stuessy, T.F., Baeza, C.M. & **López, P.G.** 2012. Genetic diversity of pioneer populations: the case of *Nassauvia argentea* (Asteraceae: Mutisieae) on Volcán Lonquimay, Chile. Plant Systematic and Evolution 298: 109-119. DOI/URL: http://dx.doi.org/10.1007/s00606-011-0527-y
- **López, P.**, Tremetsberger, K., Kohl, G. & Stuessy, T.F. 2012. Progenitor-derivative speciation in *Pozoa* (Apiaceae, Azorelloideae) of the southern Andes. Annals of Botany 109: 351-363. DOI/URL: http://dx.doi.org/10.1093/aob/mcr291
- Takajama, K., **López S., P.**, König, C., Kohl, G., Novak, J. & Stuessy, T.F. 2011. A simple and cost-effective approach for microsatellite isolation in non-model plat species using small- scale 454 pyrosequencing. Taxon 60: 1442-1449.
- **López, P.G.**, Tremetsberger, K., Stuessy, T.F., Gómez-González, S., Jiménez, A. & Baeza, C.M. 2010. Patterns of genetic diversity in colonizing plant species: *Nassauvia lagascae* var. *lanata* (Asteraceae: Mutisieae) on Volcán Lonquimay, Chile. American Journal of Botany 97: 423-432. DOI/URL: http://dx.doi.org/10.3732/ajb.0900208
- Dirnböck, T., Greimler, J., **Lopez S., P.** & Stuessy, T.F. 2003. Predicting future to the native vegetation of Robinson Crusoe Island, Juan Fernandez Archipelago, Chile. Conservation Biology 17: 1650-1659.

- Greimler, J., **Lopez, P.**, Stuessy, T.F. & Dirnböck, T. 2002. The Vegetation of Robinson Crusoe Island (Isla Masatierra), Juan Fernandez Archipelago, Chile. Pacific Science 56: 263-284.
- Anderson, G.J., Bernardello, G., **Lopez, P.**, Stuessy, T.F. & Crawford, D.J. 2000. Dioecy and wind pollination in *Pernettya rigida* (Ericaceae) of the Juan Fernández Islands. Botanical Joumal of the Linnean Society 132: 121-141.
- Anderson, G.J., Bernardello, G., **Lopez S., P.**, Crawford, D.J. & Stuessy, T.F. 2000. Reproductive biology of *Wahlenbergia* (Campanulaceae) endemic to Robinson Crusoe Island (Chile). Plant Systematics and Evolution 223: 109-123.
- Bernardello, G., Anderson, G.J., **Lopez, P.**, Cleland, M., Stuessy, T.F. & Crawford, D.J. 1999. Reproductive biology of *Lactoris fernandeziana* (Lactoridaceae). American Journal of Botany 86: 829-840.
- **López, P.** & Matthei, O. 1995. Micromorfología del aquenio en especies del género *Cyperus* L. (Cyperaceae), en Chile. Gayana Botánica 52: 67-75.
- **López S., P.** & Matthei J., O. 1994. *Cyperus odoratus* L. (Cyperaceae) new record for the adventitious flora of Chile. Gayana Botánica 51: 85-88.
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POSTERS AND PRESENTATIONS IN CONFERENCES

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- **Patricio López-Sepúlveda**, Josef Greimler, Daniel Crawford, Patricio Peñailillo, Marcelo Baeza, Eduardo Ruiz, Luis Letelier, Patricio Novoa, Alejandro Gatica & Tod Stuessy. **2014**. Introduced plant species in Robinson Crusoe Archipelago, Chile. 78th Annual meeting of the Botanical Society of Japan. Kanagawa, Japan.
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- **López, P.** & O. Matthei. **1991**. Malezas de la familia Cyperaceae A.L. Juss. en Chile. VIII Reunión Anual de Botánica. Santiago, Chile.
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- **López, P.** & M. Rondanelli. **1986**. Contribución al conocimiento de la flora terciaria en la zona carbonífera de Arauco-Concepción, Chile. XXIX Reunión de la Sociedad de Biología de Chile. Puyehue, Chile.

PROYECTS

2016-2019. Genetic patterns of anagenesis and cladogenesis in selected endemic species of the Juan Fernandez Archipelago, Chile. FODECYT N° 1160794. Leader. Amount U$ 175.000

2015-2017. Chilean fossil swampy flora could be a key to infer how the Southern American flora was established. MEXT Grant-in-Aid for Scientific Research # 15H05233. Countepart Chile.

2013-2015. Evolution and genetic diversity of endemic plants in Juan Fernandez Archipelago, Chile. Coinvestigator. Japan Society of the Promotions of the Science (JSPC) FY2013. Amount JPY 5.000.000

ATTENDANCE AT COURSES, SEMINAR AND WORKSHOP

2016. Hierarchical modeling in R: I R BASICS (4165033). 4-8 January. Dr. Billy Ernst (Dept. of Ocenography). Fac. Cs. Naturales y Oceanográficas, Universidad de Concepción. Concepción, Chile.

2015. Seminar "Integrative frameworks in Statistical Phylogeography: generating and testing biogeographical hypothesis". Dra. Lacely Knowles (University of Michigan, USA), 3-5 December. Fac. Cs. Naturales y Oceanográficas, Universidad de Concepción. Concepción, Chile.

2015. Workshop "Investigación en el Parque Nacional Archipiélago de Juan Fernández: Avances y desafíos". 29 July. Gerencia de áreas silvestres protegidas, Depto. de conservación de la diversidad biológica, CONAF. Viña del Mar, Chile.

2014. Course "Citometría de Flujo: Aplicación al estudio del contenido de ADN (Teórico-Práctico)". 7-9 May. Centro de microscopía Avanzada, Universidad de Concepción. Concepción. Chile. Código: UdeC_CBio-FC/008-05

2013. Todai Forum Workshop: "Systems biology across the Pacific: from molecules to ecosystems". 7-8 November. Adaptative radiation in plants of Chile, the long way of Hypochaeris (Asteraceae, Cichoroideae). University of Tokyo, Universidad de Chile, Pontificia Universidad Católica de Chile. Santiago, Chile.

SUPERVISION THESIS UNDERGRADUATE

2016. Oliva, Natalia. Evaluación de la variabilidad genética de tres especies de plantas vasculares en sitios prioritarios para la conservación localizados en la cordillera de la costa, Región del Biobío, Chile. Dept. of Botany, University of Concepción.

2015. Montoya, Hellen. Variabilidad genética de la especie derivada anagenéticamente Dysopsis hirsuta (Müll. Arg.) Skottsb. (Euphorbiaceae), endémica de la isla Robinson Crusoe, Archipiélago Juan Fernández, Chile. Dept. of Botany, University of Concepción.

2013. Viveros, Nataly. Variación genética en la especie anagenéticamente derivada *Rhaphithamnus venustus* (Phil.) B.L.Rob. (Verbenaceae) endémica del Archipiélago de Juan Fernández (Chile), utilizando al técnica de AFL. Dept. of Botany, University of Concepción.

FELLOWSHIPS

2011-2012: Postdoctoral Research Fellow. Department of Systematic and Evolutionary Botany, Biodiversity Center. University of Vienna, Vienna, Austria.

2006-2010: Doctoral Research Fellow. Department of Systematic and Evolutionary Botany, Biodiversity Center. University of Vienna, Vienna, Austria.

1992-1993: Investigation in Botany. University of Concepción. Concepción, Chile.

1989-1991: Ms. Sc. Program in Botany. University of Concepción, Concepción, Chile.

PARTICULARLY RELEVANT BACKGROUND

2013-2016. Editor Revista Gayana Botánica.

2001-2006. Research associate of the project "New flora of Chile", Department of Botany, University of Concepción, Chile. Taxonomy of Bignoniaceae, Primulaceae, Polygalaceae, Crassulaceae, Lythraceae and Cuscutaceae.

2002. Assistant of the project "Study of the Mosses of South-Central Chile", support by National Geographic Science.

2002. Assistant of the project "Anatomy and morphology of plants species in agronomy". University of Concepción, Chile.

2000-2001. Assistant of the project "Analysis of the vascular flora at zone temperate-Mediterranean of Chile", support by Fondecyt N° 100364, University of Concepción, Chile.

1999. Assistant of the project "Update of native vegetation in the region of Coquimbo" University of Concepción, Chile.

1994-1995. Assistant of the project "New Flora of Chile". University of Concepción, Chile.

ACADEMIC EXPERIENCE

Graduate course

2014. Curso Internacional de postgrado "Métodos en Sistemática Molecular de organismos Fotosintetizadores". Universidad de Concepción, Depto. Botánica, 15-21 January.

Undergraduate courses

2016. Vegetal Anatomy (243114); Systematic Botany (243219); Vegetal Diversity II (243221); Vegetal Diversity III (245126)
2015. Vegetal Anatomy (243114); Systematic Botany (243219); Vegetal Diversity II (243221)
2014. Vegetal Anatomy (243114); Systematic Botany (243219)
2013. Vegetal Anatomy (243114); Systematic Botany (243219)
2005. Vegetal Biology I (243207); Botany (243216), Botany (003)
2004. Botany (243216)
2000. Systematic Botany (101245)
1999. Systematic Botany (101245), General Botany (928)
1998. Systematic Botany (101245)
1993. General Botany (01083), Vegetal Biology (243102)
1992. Dendrology (201208); General Botany (01083)
1991. Vegetal Anatomy (101244)

Genetic patterns of anagenesis and cladogenesis: a case study from the Juan Fernández archipelago, Chile

Patricio López-Sepúlveda, Dept. of Botany, University of Concepción, Concepción, Chile

The geographical isolation of oceanic islands offers invaluable opportunities to study patterns and processes of evolution in endemic species of plants. Two of the major types of speciation in islands are anagenesis and cladogenesis, both being of great evolutionary interest for understanding the genetic consequences of speciation. Cladogenesis is frequent in islands, but only recently has it been possible to reveal population genetic variation with modern molecular tools. With regard to anagenesis, only a few studies have been completed on genetic variation at the populational level.

The Juan Fernández Archipelago is located 667 km from continental Chile (33º38'S, 78º51' W), and consists of three islands of volcanic origin, Robinson Crusoe and Alejandro Selkirk, separated by 181 km, both with an approximate area of 50 km^2,plusasmallerisland,SantaClara. Alejandro Selkirk Island has an estimated geological age of 1-2 million years, while for Robinson Crusoe Island the age is around 4 million years. The vascular flora of the archipelago consists of 75 families, about 423 species, and with 66% endemism at the specific level, one of the highest in the world in relation to island area. The archipelago is considered a hot spot of biodiversity, and was designated as a Chilean National Park in 1935 and Biosphere Reserve by UNESCO in 1977.

Genetic variation was investigated at the population level in endemic species of the Juan Fernández archipelago, using the molecular tool of Amplified Fragment Length Polymorphism (AFLP). Species derived cladogenetically occur in the genera *Erigeron* L. (Asteraceae; Alejandro Selkirk Island) and *Robinsonia* DC. (Asteraceae; Robinson Crusoe Island). Species having originated by anagenesis are *Drimys confertifolia* Phil. (Winteraceae; both islands), *Dysopsis hirsuta* (Müll. Arg.) Skottsb. (Euphorbiaceae, Robinson Crusoe Island), *Nothomyrcia fernandeziana* (Hook. et Arn.) Kausel (Myrtaceae; Robinson Crusoe Island), *Myrceugenia schulzei* Johow (Myrtaceae; Alejandro Selkirk Island), and *Rhaphithamnus venustus* (Phil.) B.L. Rob. (Rhamnaceae; both islands). In cases where the continental parental species is known, comparison was also made with patterns of genetic variation in those taxa.

Results in the species anagenetically derived show a similar or high level of genetic diversity in comparison to that of the parental species, and weak or absence of geographical structure of the variation. The genetic data in the species of *Erigeron* on Alejandro Selkirk Island and *Robinsonia* on Robinson Crusoe Island, show much less variation within each endemic species as well as genetic distinctness among them, hence being compatible with their cladogenetic origins involving adaptive radiation.

This study was financed by project FONDECYT N° 1160794 to PLS and FWF N° P21723-B16 to TFS.

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EDUCATION

1983 April - 1985 March Graduate School of Science, Hiroshima University

1979 April - 1983 March Faculty of Science, Hiroshima University

RESEARCH EXPERIENCE

Oct 2006 – present Professor (Full), Kyoto University, Graduate School of Agriculture, Japan

Apr 2000 – Sep 2006 Professor (Associate), Hiroshima University, Graduate School of Integrated Arts and Sciences, Higashi Hiroshima, Japan

Apr 1985 – Mar 2000 Research Officer, Forestry and Forest Products Research Institute, Ministry of Agriculture, Forestry and Fisheries of Japan

SKILLS AND KEYWORDS

Biodiversity, Population Genetics, Conservation Genetics, Phylogenetic Analysis, Molecular Ecology, Microsatellites, Genetic Diversity, Genetics, Molecular Markers, Microsatellite Genotyping, Phylogeography, Ecology and Evolution, Evolutionary Genetics, Ecological Genomics, DNA Sequencing, Molecular Phylogenetics, Molecular Evolution, Speciation, DNA Barcoding

BOOK CHAPTERS

Yuji Isagi, Shingo Kaneko: Ubiquitous Genotyping for Conservation of Endangered Plant Species. Integrative Observations and Assessments, 01/2014; , ISBN: 978-4-431-54782-2

Yuji Isagi: Significance of Single-Pollen Genotyping in Ecological Research. Single-Pollen Genotyping, 11/2010;

Toshiaki Kondo, Sen Nishimura, Yoko Naito, Yoshihiko Tsumura, Toshinori Okuda, Kevin Kit Siong Ng, Soon Leong Lee, Norwati Muhammad, Nobukazu Nakagoshi, Yuji Isagi: Can Tiny Thrips Provide Sufficient Pollination Service During a General Flowering Period in Tropical Rainforest?. Single-Pollen Genotyping, 11/2010;

Yu Matsuki, Motoshi Tomita, Yuji Isagi: Pollination Efficiencies of Insects Visiting Magnolia obovata, as Determined by Single-Pollen Genotyping. Single-Pollen Genotyping, 03/2010;

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JOURNAL PUBLICATIONS

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Takashi Shiga, Masashi Yokogawa, Shingo Kaneko, Yuji Isagi: *Genetic diversity and population structure of Nuphar submersa (Nymphaeaceae), a critically endangered aquatic plant endemic to Japan, and implications for its conservation*. Journal of Plant Research 11/2016; DOI:10.1007/s10265-016-0869-1

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Toshiaki Kondo, Sen Nishimura, Naoki Tani, Kevin Kit Siong Ng, Soon Leong Lee, Norwati Muhammad, Toshinori Okuda, Yoshihiko Tsumura, Yuji Isagi: *Complex pollination of a tropical Asian rainforest canopy tree by flower-feeding Thrips and Thrips-Feeding predators*. American Journal of Botany 10/2016; 103(11). DOI:10.3732/ajb.1600316

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Naoyuki Nakahama, Yuki Hirasawa, Tsubasa Minato, Masahiro Hasegawa, Yuji Isagi, Takashi Shiga: *Recovery of genetic diversity in threatened plants through use of germinated*

seeds from herbarium specimens. Plant Ecology 11/2015; 216(12). DOI:10.1007/s11258-015-0547-8

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Conservation genetics with information from NGS in the Bonin Islands, a UNESCO World Natural Heritage site

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The Bonin (Ogasawara) Islands are typical oceanic islands, locating in the North-Western Pacific, ca. 1,000 km south of the main Japanese Archipelago. The land is dominated by mainly dry forests and sclerophyllous shrub-lands, and more than 440 native vascular plant species, including as many as 70% endemics are growing. As for land snail, 90% of 100 recorded native species are endemic. Outstanding examples of ongoing evolutionary processes evidenced by high levels of endemism and speciation by adaptive radiation can be observed in the Bonin Islands. Because of the combination of both the high levels of endemism and significant adaptive radiation, the archipelago of the Bonin Islands was designated as a World Natural Heritage in 2011. As is often the case for oceanic island ecosystems, the Bonin Islands had been disturbed by human activities such as deforestation and the introduction of invasive alien species. In order to construct rational and effective conservation measures, we have been trying to understand/monitor the current status of the biodiversity by using genetic information from NGS. Genetic analyses for plant and bird species endemic to the Bonin Islands uncovered genetic structure, existence of unknown wild plants, unexpected feeding habitat of endangered birds, etc.

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PEER-REVIEWED PUBLICATIONS:

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2016 Annual Meeting of the Botanical Society of America. Savannah, Georgia. “New insight into the evolutionary history and biogeographic history of golden bells (*Forsythia*; Oleaceae)”.

2016 East Asian Plant Diversity and Conservation Symposium. Tokyo, Japan. Aug 23-25. “Origin and evolution of skunk cabbage (*Symplocarpus*) and related taxa in East Asia and North America”. Invited Symposium

2015 Biodiversity Conservation and Seed Vault. Korea National Arboretum, Korea. Oct 20-22. “Origin and evolution of plants on oceanic islands: case studies from the Atlantic ocean and Korea”. Invited Symposium

2015 International Conference Dedicated to the 20th Anniversary of CNEAS, Tohoku University, Japan. Dec 5-6. “Phylogeny and phylogeography of *Symplocarpus* and *Lysichiton* (Araceae; Orontoideae) in eastern Asia and North America”. Invited Symposium

2015 Research-Based Conservation Policies, Ewha EcoScience Symposium, Ewha Womans University, Korea. Oct 19. “Conservation of plants on oceanic islands: strategies in the Macaronesian Islands and Ulleung Island, Korea”. Invited Symposium

MANUSCRIPT REVIEWER:

The Plant Cell, American Journal of Botany, Anales del Real Jardín Botánico de Madrid, Annals of Botany, Molecular Biology and Evolution, Molecular Ecology, Systematic Botany, Molecular Phylogenetics and Evolution, Madrono, New Forests, Theoretical and Applied Genetics, Biological Invasions, Biochemical Genetics, Systematic Biology, Crop Science, and Plant Systematics and Evolution.

GRANT REVIEWER:

Ohio Plant Biotechnology Consortium, National Science Foundation, Natural Environment Research Council (England)

Origin and evolution of insular plant endemics in Korea: case studies of flowering cherries and Ulleungdo figwort

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We present the origin and evolution of two endemic plants from oceanic islands, i.e., Jeju-do and Ulleung-do, in Korea. Jeju is a volcanic island situated off the southern coast of the Korean Peninsula. The island formed by volcanic activities from the end of Pliocene till the historic era was connected with the mainland and the Japanese archipelago during the last glacial maximum, facilitating migration of different floristic elements. Approximately 2000 plant taxa occur in Jeju Island and the percentage of endemics is ca. 5.3%. *Prunus* (Rosaceae) represents one of the endemic species rich genera, but little is known for their origin and evolution in Jeju Island. In particular, the hybrid origin of cultivated *P.* x *yedoensis* and its relationship to wild *P. yedoensis*, naturally occurring in Jeju Island, have been highly controversial and elusive. Based on several molecular markers (i.e., nuclear and chloroplast), we provide convincing evidence for bidirectional and multiple hybrid origin of wild *P. yedoensis* in Jeju Island, as well as independent origin between wild and cultivated *P.* x *yedoensis*. We further suggest important role of gene flow and hybridization in the origin and evolution of subg. *Cerasus* in Jeju Island. Ulleung Island, which was formed during the late Tertiary (ca., 1.8 Myr), is of a volcanic origin, but unlike Jeju, it has never been connected to adjacent continental landmass. Of approximately 500 native species of vascular plants, about 40 (ca. 8%) of which are endemic on the island. Ulleung Island, with unusually high level of anagenetic speciation (ca. 88%), has been known as an excellent system to study patterns and processes of early stage of flowering plant evolutions on an oceanic island. As an initial step to elucidate anagenetic speciation, we investigate the origin of *Scrophularia takesimensis* (Scrophulariaceae), one of critically endangered endemic species in Ulleung Island. The global scale ITS phylogeny suggests that three eastern Asia species are monophyletic. However, *S. takesimensis* is more closely related to the clade containing eastern North American/Caribbean species rather than to either *S. alata* or *S. grayanoides*. The global scale cpDNA phylogeny demonstrates that the eastern North America/Caribbean clade is sister to the clade containing three eastern Asian species. In addition, the monophyletic *S. takesimensis* is deeply embedded within paraphyletic *S. alata*, sharing its most recent common ancestor with populations from Japan (2n=94). Geographically structured two divergent cp haplotype groups within *S. takesimensis* may suggest at least two independent introductions from different source areas. The phylogenetic incongruence between nuclear and chloroplast genomes, polyploidization and aneuploidization of *S. takesimensis* (2n=80) and closely related species, and unusual intercontinental disjunct distribution require further detailed independent nuclear genealogical, cytological, and biogeographic analyses.