

BIOGRAPHICAL DATA – GEORGE NEWCOMBE

Field and date of investigator's highest degree:

Degree	Institution	Department	Year
B.Sc. (Ag.)	McGill University	Plant Science	1983
Ph.D.	University of Guelph	Botany	1988

Date of initial appointment as a tenure-track faculty member at UI: August 1999.

Present academic rank: Professor

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Publications at the UI [1999-2014]:

1. BUSBY, P.E., LAMIT, L., KEITH, A.R., NEWCOMBE, G., GEHRING, C., WHITHAM, T.G., and DIRZO, R. 2015. Genetics-based interactions among plants, pathogens and herbivores define arthropod community structure. *Ecology* **96**: in press.
2. RIDOUT, M., and NEWCOMBE, G. 2015. The frequency of modification of *Dothistroma* pine needle blight severity by fungi within the native range. *Forest Ecology and Management* **337**: 153-160.
3. BUSBY, P.E., NEWCOMBE, G., DIRZO, R., and WHITHAM, T.G. 2014. Differentiating genetic and environmental drivers of plant-pathogen community interactions. *Journal of Ecology* **102**: 1300-1309.
4. ASCHEHOUG, E., THARAYIL, N., CALLAWAY, R.M., and NEWCOMBE, G. 2014. Fungal endophyte increases the allelopathic effects of an invasive forb. *Oecologia* **175**: 285-291.
5. NEWCOMBE, G. & PSCHIEDT, J. 2014. Rust diseases of *Rhododendron* and *Azalea*. In revised edition of the **Compendium of Rhododendron and Azalea Diseases**. D.M. Benson & R. Linderman, eds. **APS Press**.
6. BUSBY, P.E., ZIMMERMAN, N., WESTON, D.J., JAWDY, S.A., HOUBRAKEN, J., and NEWCOMBE, G. 2013. Leaf endophytes and *Populus* genotype affect severity of damage from the necrotrophic leaf pathogen, *Drepanopeziza populi*. *Ecosphere* **4**(10): article 125 (12 pages).
7. OSTRY, M., RAMSTEDT, M., NEWCOMBE, G., and STEENACKERS, M. 2013. Diseases of Poplars and Willows. Chapter 8 in *The Poplar and Willows Book*. Edited by Jud Isebrands and Jim Richardson. Published by the **International Poplar Commission** of UN FAO.
8. BUSBY, P.E., NEWCOMBE, G., DIRZO, R., and WHITHAM, T.G. 2013. Genetic basis of pathogen community structure for foundation tree species in a common garden and in the wild. *Journal of Ecology* **101**: 867-877.
9. RAGHAVENDRA, A.K.H. and NEWCOMBE, G. 2013. The contribution of foliar endophytes to quantitative resistance to *Melampsora* rust. *New Phytologist* **197**: 909-918.
10. RAGHAVENDRA, A.K.H., NEWCOMBE, G., SHIPUNOV, A., BAYNES, M., and TANK, D. 2013. Exclusionary interactions among diverse fungi infecting developing seeds of *Centaurea stoebe*. *FEMS Microbiology Ecology* **84**: 143-153.

11. XIAO, S., CALLAWAY, R. M., NEWCOMBE, G., and E.T. ASCHEHOUG. 2012. Models of experimental competitive intensities predict home and away differences in invasive impact and the effects of an endophytic mutualist. ***American Naturalist*** 80: 707-718.
12. BAYNES, M., NEWCOMBE, G., CARTA, L., and ROSSMAN, A. 2012. A fungivorous nematode and its fungal cultivar alter the endophyte community of *Bromus tectorum*. ***Fungal Ecology*** 5: 610-623.
13. BUSBY, P.E., AIME, M.C., and NEWCOMBE, G. 2012. Foliar pathogens of *Populus angustifolia* are consistent with a hypothesis of Beringian migration into North America. ***Fungal Biology*** 116: 792-801.
14. BAYNES, M., NEWCOMBE, G., DIXON, L., CASTLEBURY, L., & O'DONNELL, K. 2012. A novel plant-fungal mutualism associated with fire. ***Fungal Biology*** 116: 133-144.
15. ASCHEHOUG, E.T., METLEN, K.L., CALLAWAY, R.M., & NEWCOMBE, G. 2012. Fungal endophytes directly increase the competitive effects of an invasive forb. ***Ecology*** 93: 3-8.
16. BENNETT, C., AIME, M.C., and G. NEWCOMBE. 2011. Molecular and pathogenic variation within *Melampsora* on *Salix* in western North America reveals numerous cryptic species. ***Mycologia*** 103: 1004-1018.
17. NEWCOMBE, G. 2011. Endophytes in Forest Management: Four Challenges. Pages 251-262 in: AM Pirttila, A.C. Frank (eds.). **Endophytes of Forest Trees: Biology and Applications**. Springer Berlin, Heidelberg, New York.
18. NEWCOMBE, G. and DUGAN, F.M. 2010. Fungal pathogens of plants in the Homogocene. Chapter 1 in: Y. Gherbawy, K. Voigt (eds.). **Molecular Identification of Fungi**. Springer-Verlag, Berlin, Heidelberg, New York: pages 3-35.
19. NEWCOMBE, G., MARTIN, F., and A. KOHLER. 2010. Defense and nutrient mutualisms in *Populus*. Chapter 12 in: S. Jansson et al. (eds.). **Genetics and Genomics of Populus**. Springer-Verlag, Berlin, Heidelberg, New York: pages 247-279.
20. WORAPONG, J., SUN, J., and G. NEWCOMBE. 2009. First report of *Myrothecium roridum* from a gymnosperm. ***North American Fungi*** 4(6): 1-6.
21. NEWCOMBE, G., GAYLORD, R., YENISH, J.P., MASTROGIUSEPPE, J., and F.M. DUGAN. 2009. New records for pathogenic fungi on weedy or non-indigenous plants. ***North American Fungi*** 4(8): 1-12.
22. Shipunov, A., A.K. Raghavendra, R.J. Ganley, G. and G. NEWCOMBE. 2009. *Ulocladium populi* sp. nov. E.G. Simmons, G. Newcombe and A. Shipunov, sp. nov. ***Persoonia*** 23: 180-181.
23. NEWCOMBE, G. 2009. Forest Genetics – A Tree is Just a Forest's Way of Making Another Forest. ***BioScience*** 59: 351-352.
24. Newcombe, G., A. Shipunov, S. D. Eigenbrode, A. Raghavendra, H. Ding, C. L. Anderson, R. Menjivar, M. Crawford, and M. Schwarzländer. 2009. Endophytes influence protection and growth of an invasive plant. ***Communicative and Integrative Biology*** 2:1-3.
25. HOFFMANN K, TELLE S, WALTHER G, ECKART M, KIRCHMAIR M, PRILLINGER HJ, PRAZENICA A, NEWCOMBE G, DÖLZ F, PAPP T, VÁGVÖLGYI C, DEHOOG S, OLSSON L & VOIGT K. 2008. Diversity, genotypic identification, ultrastructural and phylogenetic characterization of zygomycetes from different ecological habitats and climatic regions: Limitations and utility of nuclear ribosomal DNA barcode markers. In: Y. Gherbawy (ed.) **Current Advances in Molecular Mycology**. Nova Science Publishers, Inc. (USA). Invited contribution.

26. SHIPUNOV, A., NEWCOMBE, G., RAGHAVENDRA, A., and C. ANDERSON. 2008. Hidden diversity of endophytic fungi from invasive spotted knapweed (*Centaurea stoebe* L., Asteraceae). ***American Journal of Botany*** 95: 1096-1108.
27. GANLEY, R.J., SNIEZKO, R.A., and G. NEWCOMBE. 2008. Endophyte-mediated resistance against white pine blister rust in *Pinus monticola*. ***Forest Ecology and Management*** 255: 2751-2760.
28. ROSSMAN, AMY, FARR, DAVE, PLATAS, GONZALO, and G. NEWCOMBE. 2008. *Hydropisphaera fungicola* sp. nov. ***Fungal Planet***, no. 22.
29. DUGAN, FRANK, and G. NEWCOMBE. 2007. New records for powdery mildews and *Taphrina* species in Idaho and Washington. ***North American Fungi*** 2(8): 1-5.
30. GANLEY RJ, and NEWCOMBE G. 2006. Fungal endophytes in seeds and needles of *Pinus monticola*. ***Mycological Research*** 110: 318-327.
31. NEWCOMBE, G. 2005. Genes for parasite-specific, nonhost resistance in *Populus*. ***Phytopathology*** 95: 779-783.
32. NISCHWITZ, C, NEWCOMBE, G, and ANDERSON, CL. 2005. Host specialization of the hyperparasite *Eudarlucia caricis* and its evolutionary relationship to *Ampelomyces*. ***Mycological Research*** 108: 421-428.
33. SMITH, JA, BLANCHETTE, RA, and NEWCOMBE, G. 2004. Molecular and morphological characterization of the willow rust fungus, *Melampsora epitea*, from arctic and temperate hosts in North America. ***Mycologia*** 96: 1354-1362.
34. GANLEY RJ, BRUNSFELD SJ, and NEWCOMBE G. 2004. A community of unknown, endophytic fungi in western white pine. ***Proceedings of the National Academy of Sciences*** 101: 10107-10112.
35. NEWCOMBE, G. 2004. Forest Pathology Rust Diseases. Chapter 5 in "**Encyclopedia of Forest Sciences**". Burley, J., Evans, J., and Youngquist, J., editors. Elsevier Science.
36. MARTIN, F., TUSKAN, G.A., DiFAZIO, S.P., LAMMERS, P., NEWCOMBE, G. and PODILA, G.K. 2004. Symbiotic sequencing for the *Populus* mesocosm. ***New Phytologist*** 161:330-335.
37. NEWCOMBE, G. and NISCHWITZ, C. 2004. First report of powdery mildew (*Erysiphe cichoracearum*) on creeping thistle (*Cirsium arvense*) in North America. ***Plant Disease*** 88: 312.
38. NEWCOMBE, G. 2003. *Puccinia tanacetii*: specialist or generalist? ***Mycological Research*** 107: 797-802.
39. NISCHWITZ, C. and NEWCOMBE, G. 2003. First report of powdery mildew (*Sawadaea bicornis*) on Norway maple (*Acer platanoides*) in North America. ***Plant Disease*** 87: 451.
40. NISCHWITZ, C. and NEWCOMBE, G. 2003. First report of powdery mildew (*Microsphaera palczewskii*) on Siberian pea tree (*Caragana arborescens*) in North America. ***Plant Disease*** 87: 451.
41. NEWCOMBE, G. 2003. Native *Venturia inopina* sp. nov., specific to *Populus trichocarpa* and its hybrids. ***Mycological Research*** 107: 108-116.
42. WOO, K.-S. and NEWCOMBE, G. 2003. Absence of residual effects of a defeated resistance gene in poplar. ***Forest Pathology*** 33: 81-89.
43. NEWCOMBE, G., and OSTRY, M. 2001. Recessive resistance to Septoria stem canker of hybrid poplar. ***Phytopathology*** 91:1081-1084.

44. NEWCOMBE, G., OSTRY, M., HUBBES, M., PERINET, P. and MOTTET, M.-J. 2001. Poplar Diseases. In **Poplar Culture in North America**. Part A, Chapter 8. Edited by D.I. Dickmann, J.G. Isebrands, J.E. Eckenwalder, and J. Richardson. NRC Research Press, National Research Council of Canada, Ottawa, ON K1A 0R6, Canada. pp. 249-276.
45. NEWCOMBE, G., STIRLING, B., and BRADSHAW, H.D., Jr. 2001. Abundant pathogenic variation in the new hybrid rust population of *Melampsora x columbiana* on hybrid poplar. **Phytopathology** 91:981-985.
46. STIRLING, B. , NEWCOMBE, G., VREBALOV, J., BOSDET, I., and H.D. BRADSHAW, JR. 2001. Suppressed recombination around the *MXC3* locus, a major gene for resistance to poplar leaf rust. **Theoretical and Applied Genetics** 103: 1129-1137.
47. JAMES, R.R., and NEWCOMBE, G. 2000. Defoliation patterns and genetics of insect resistance in cottonwoods. **Canadian Journal of Forest Research** 30: 85-90.
48. NEWCOMBE, G. 2000. First report of *Pestalotiopsis populi-nigrae* on poplar in North America. **Plant Disease** 84(5):595.
49. NEWCOMBE, G. 2000. Inheritance of resistance to *Glomerella cingulata* in *Populus*. **Canadian Journal of Forest Research** 30: 639-644.
50. NEWCOMBE, G., STIRLING, B., McDONALD, S.K., and BRADSHAW, H.D., Jr. 2000. *Melampsora x columbiana*, a natural hybrid of *M. medusae* and *M. occidentalis*. **Mycological Research** 104: 261-274.
51. NEWCOMBE, G., and THOMAS, P.L. 2000. Inheritance of carboxin resistance in a European field isolate of *Ustilago nuda*. **Phytopathology** 90:179-182.
52. FRITZ, R.S., MOULIA, C., and NEWCOMBE, G. 1999. Resistance of hybrid plants and animals to herbivores, pathogens, and parasites. **Annual Review of Ecology and Systematics** 30: 565-591.

Refereed Publications [prior to 1999]:

1. NEWCOMBE, G. 1998. A review of exapted resistance to diseases of *Populus*. **European J. Forest Pathology** 28: 209-216.
2. NEWCOMBE, G. 1998. Southerly extension of poplar leaf blight (*Linospora tetraspora*) in the Pacific Northwest. **Plant Disease** 82:590.
3. NEWCOMBE, G. 1998. Association of *Mmd1*, major gene for resistance to *Melampsora medusae* f.sp. *deltoidae*, with quantitative traits in poplar rust. **Phytopathology** 88: 114-121.
4. NEWCOMBE, G. and CALLAN, B.E. 1997. First report of *Marssonina brunnea* f.sp. *brunnea* on hybrid poplar in the Pacific Northwest. **Plant Disease** 81:231.
5. NEWCOMBE, G. and VAN OOSTEN, C. 1997. Variation in resistance to *Venturia populina*, the cause of poplar leaf and shoot blight in the Pacific Northwest. **Canadian Journal of Forest Research** 27:883-889.
6. NEWCOMBE, G. 1996. The specificity of fungal pathogens of *Populus*. In *Biology of Populus and its Implications for Management and Conservation*. Part I, Chapter 10. Edited by R.F. Stettler, H.D. Bradshaw, Jr., P.E. Heilman, and T.M. Hinckley. NRC Research Press, National Research Council of Canada, Ottawa, ON. pp. 223-246.
7. NEWCOMBE, G. and BRADSHAW, H.D. 1996. Quantitative trait loci conferring resistance in hybrid poplar to *Septoria populicola*, the cause of leaf spot. **Canadian Journal of Forest Research** 26:1943-1950.

8. NEWCOMBE, G., H.D. BRADSHAW, JR., G.A CHASTAGNER, and R.F. STETTLER. 1996. A major gene for resistance to *Melampsora medusae* f.sp. *deltoidae* in a hybrid poplar pedigree. *Phytopathology* 86:87-94.
9. NEWCOMBE, G., CHASTAGNER, G.A, CALLAN, B., and OSTRY, M.E. 1995. An epidemic of Septoria leaf spot on *Populus trichocarpa* in the Pacific Northwest in 1993. *Plant Disease* 79:212.
10. NEWCOMBE, G., G.A CHASTAGNER, and S.K. McDONALD. 1994. Additional coniferous aecial hosts of the poplar leaf rusts, *Melampsora larici-populina* and *M. medusae* f.sp. *deltoidae*. *Plant Disease* 78: 1218.
11. NEWCOMBE, G., G.A CHASTAGNER, W. SCHUETTE, and B.J. STANTON. 1994. Mortality among hybrid poplar clones in a stool bed following leaf rust caused by *Melampsora medusae* f.sp. *deltoidae*. *Canadian Journal of Forest Research* 24: 1984-1987.
12. PINON, J., NEWCOMBE, G. and CHASTAGNER, G. 1994. Identification of races of *Melampsora larici-populina*, the Eurasian poplar leaf rust fungus, in California and Washington. *Plant Disease* 78:101.
13. NEWCOMBE, G. and G.A CHASTAGNER. 1993. A leaf rust epidemic of hybrid poplar along the Lower Columbia River caused by *Melampsora medusae*. *Plant Disease* 77: 528-531.
14. NEWCOMBE, G. and G.A CHASTAGNER. 1993. First report of the Eurasian poplar leaf rust fungus, *Melampsora larici-populina*, in North America. *Plant Disease* 77: 532-535.
15. NEWCOMBE, G. and THOMAS, P.L. 1991. The incidence of carboxin resistance in *Ustilago nuda*. *Phytopathology* 81: 247-250.
16. NEWCOMBE, G., STALEY, J.M. and CHASTAGNER, G.A 1991. *Glomerella cingulata* associated with leaf and shoot blight of hybrid poplar. *Plant Disease* 75: 1286.
17. NEWCOMBE, G., LEE, B., and ROBB, J. 1990. Early vascular sporulation: its role in the virulence of *Verticillium albo-atrum* in wilt of alfalfa. *Physiological and Molecular Plant Pathology* 36: 441-449.
18. NEWCOMBE, G. and THOMAS, P.L. 1990. The use of polyacrylic acid to prevent mycelial aggregation of *Ustilago nuda* in agitated liquid culture. *Mycological Research* 94: 1141-1144.
19. NEWCOMBE, G. and THOMAS, P.L. 1990. Fungicidal and fungistatic effects of carboxin on *Ustilago nuda*. *Phytopathology* 80: 509-512.
20. NEWCOMBE, A.G., PAPADOPOULOS, Y.A., ROBB, J., and CHRISTIE, B.R. 1989. The colonization ratio: a measure of pathogen invasiveness and host resistance in *Verticillium* wilt of alfalfa. *Canadian Journal of Botany* 67: 365-370.
21. NEWCOMBE, G., and ROBB, J. 1989. An improved method of determining the colonization ratio in *Verticillium*-infected alfalfa plants. *Canadian Journal of Plant Pathology* 11: 60-64.
22. NEWCOMBE, G., and ROBB, J. 1989. The chronological development of a lipid-to-suberin response at spore trapping sites in *Verticillium* wilt of alfalfa. *Physiological and Molecular Plant Pathology* 34: 55-73.
23. NEWCOMBE, G., and ROBB, J. 1988. The function and relative importance of the vascular coating response in highly resistant, moderately resistant and susceptible alfalfa infected by *Verticillium albo-atrum*. *Physiological and Molecular Plant Pathology* 33: 47-58.

24. ELANGO, D., ROBB, J., NEWCOMBE, G., and BUSCH, L.V. 1986. Growth pouch technique for the observation of cellular interactions between alfalfa seedling roots and *Verticillium albo-atrum*. *Canadian Journal of Plant Pathology* 8: 78-84.

Selected Synergistic Activities:

- Instructor of two undergraduate courses [*Forest and Plant Pathology* and *Inspiring Lives*], and a graduate course [*Invasion Biology*].
- Invited to speak on ecological roles of endophytes at venues in the U.S. and internationally.
- Reviewer [manuscripts and proposals] and external examiner [theses] in the area of plant-fungal interactions.
- Senior Editor of *Plant Disease*, December 2003 to December 2006.
- Co-Director of the Center for Research on Invasive Species and Small Populations of the U. of Idaho, 2005-2007.