

**Supplementary material**

**Appendix 1**

Table A1. List of herbaria that were used to compile locations of *Artemisia tridentata*. number of collections of *Artemisia tridentata* with geographic location information, and range of collection year. Accessed March 29, 2010.

Herbarium	Link to website	# of locations	Years of collection
Oregon State University Herbarium	<a href="http://oregonstate.edu/dept/botany/herbarium/db.php">http://oregonstate.edu/dept/botany/herbarium/db.php</a>	2149	1894-2009
Rocky Mountain Herbarium	<a href="http://www.rmh.uwyo.edu/data/search.php">http://www.rmh.uwyo.edu/data/search.php</a>	944	1872-2006
Utah State University Intermountain Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	662	1900-2006
Consortium of Pacific Northwest Herbaria	<a href="http://www.pnwherbaria.org/herbariumindex.php">http://www.pnwherbaria.org/herbariumindex.php</a>	135	1894-2008
University of California, Riverside Plant Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	70	1928-2008
Colorado State University Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	62	1924-2007
Deaver Herbarium (Northern Arizona University)	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	36	1916-2008
University of Arizona Herbarium	<a href="http://ag.arizona.edu/herbarium/search">http://ag.arizona.edu/herbarium/search</a>	34	1913-2008
Herbarium at the Burke Museum of Natural History and Culture	<a href="http://biology.burke.washington.edu/herbarium/collections/vascular/search.php">http://biology.burke.washington.edu/herbarium/collections/vascular/search.php</a>	26	1898-2008
Arizona State University Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	25	1941-2006
New Mexico Biodiversity Collections Consortium	<a href="http://nmbiodiversity.org/">http://nmbiodiversity.org/</a>	19	1952-2005
University of New Mexico Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	15	1952-2005
Navajo Nation Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	6	1994-2003
Grand Canyon National Park	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	2	1990-1994
New York Botanical Garden	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	2	1984-1994
Gila Center for Natural History Herbarium	<a href="http://swbiodiversity.org/seinet/collections/index.php">http://swbiodiversity.org/seinet/collections/index.php</a>	1	1991

Table A2. List of variables of the two datasets (climatic, ecohydrological) and variables that were excluded due to collinearity (<sup>ex</sup>, pair-wise correlation coefficients > 0.7).

Climatic dataset	Ecohydrological dataset
Mean annual temperature * (° C)	Actual evapotranspiration (AET, mm)
Minimum monthly temperature (° C)	Ratio transpiration:AET
Maximum monthly temperature <sup>ex</sup> (° C)	Ratio AET:potential evapotranspiration <sup>ex</sup> (PET)
Mean annual precipitation (mm)	<i>Top soil layers (≤ 30 cm)</i>
Winter month precipitation <sup>ex</sup> (Dec - Feb; mm)	Length of dry periods <sup>ex</sup> (month)
Summer month precipitation (Jun - Aug; mm)	Start of dry periods (month)
Coefficient of variation of monthly precipitation	Maximum of soil water potential <sup>ex</sup> (SWP, MPa)
Correlation coefficient between monthly precipitation and temperature	Minimum of SWP <sup>ex</sup> (MPa)
Growing degree days <sup>ex</sup> (base 5° C)	Time of maximum SWP (month)
	Time of minimum SWP (month)
	Correlation coefficient between PET and median SWP
	Maximum of available soil water (ASW, mm)
	Minimum of ASW (mm)
	Time of maximum ASW <sup>ex</sup> (month)
	Time of minimum ASW <sup>ex</sup> (month)
	<i>Bottom soil layers (&gt; 30 cm)</i>
	Length of dry periods <sup>ex</sup> (month)
	Start of dry periods * (month)
	Maximum of SWP * (MPa)
	Minimum of SWP * (MPa)
	Time of maximum SWP (month)
	Time of minimum SWP * (month)
	Correlation coefficient between PET and median SWP *
	Maximum of available soil water <sup>ex</sup> (ASW, mm)
	Minimum of ASW <sup>ex</sup> (mm)
	Time of maximum <sup>ex</sup> ASW (month)
	Time of minimum <sup>ex</sup> ASW (month)

\* Variable was normalized (Leathwick et al. 2005)

## References

Leathwick, J. R. et al. 2005. Using multivariate adaptive regression splines to predict the distributions of New Zealand's freshwater diadromous fish. — *Freshwater Biol.* 50: 2034-2052.