Purple Loosestrife *Lythrum salicaria*

Ecology: Purple loosestrife is an emergent, rhizomatous, perennial with erect stems. The leaves are simple, entire and opposite or whorled with rose-purple flowers consisting of 5 to 7 petals (Whitson et al. 1996). Purple loosestrife prefers aquatic sites along stream banks and shallow ponds, though it has successfully invaded drier regions by utilizing irrigation canals and waterways as pathways to dispersal (Whitson et al. 1996). *L. salicaria* prefers moist soils of neutral to slightly acid pH, however it is found in a wide range of soil textures and types and is able to adjust to seasonal or semi-permanent changes in water levels (Thompson et al. 1999).

The successful spread of purple loosestrife is attributed to its ability to reproduce through seed or vegetative means, prolific seed production and a wide scope of dispersal mechanisms. A mature plant can produce up to 2.7 million seeds and disturbance to underground stems increases spread by encouraging new growth from adventitious shoots and roots (Thompson et al. 1999).

Purple loosestrife has drastically altered wetlands across North America (Thompson et al. 1999). Once *L. salicaria* is established, it outcompetes and replaces native plants (Gaudet and Keddy 1995) that provide higher quality food and habitat for wildlife (Raloff 1992; Brown et al. 2002). *L. salicaria* forms dense homogeneous stands that restrict native wetland plant species and reduce future reproduction by native plants through competition for pollinators (Thompson 1987; Brownet al. 2002). The recreational and overall aesthetic value of wetlands and waterways is diminished as dense stands of *L. salicaria* choke waterways and decrease biodiversity

Distribution*:* Purple loosestrife is of Eurasian origin and has been established in North America since the early 1800's. This species has expanded its distribution from its point of introduction in the northeast to the western United States and north into Canada (Thompson et al. 1999). Purple loosestrife currently inhabits 43 of the 48 contiguous states and is prevalent in Utah's northern wetland areas in Cache, Weber, and Davis counties (Sturtevant 2008). It is also becoming more prevalent in central and eastern Utah and is known to inhabit Salt Lake, Utah, Wasatch, Carbon, Emery, Uintah and Grand counties (Pers. Comm. Ben Franklin. 2008. Botanist, Utah Natural Heritage Program, Utah Division of Wildlife Resources).

Pathways of Introduction: Purple loosestrife spreads downstream through water dispersal of seeds and vegetative matter. Seeds are unintentionally transported and spread with wetland soil carried by animals, humans, boats and vehicles (Thompson et al. 1999). Purple loosestrife is also widely sold as an ornamental in states where regulations do not prohibit its sale and distribution. In Utah, purple loosestrife is listed as a noxious weed and its sale is prohibited.

Management considerations: The best control measure, as with many invasive plants, is to preserve a healthy native ecosystem to prevent or slow invasion (ISSG 2006). Herbicides are the most commonly used method of control for purple loosestrife. Commonly used chemicals include glyphosphate sold as Rodeo® for use in wetlands and

Roundup® for use in uplands, 2, 4-D and Renovate®. However, glyphosphate is nonselective and can kill desirable plants associated with loosestrife if applied carelessly (Butterfield et al. 1996). Multiple chemical treatments are usually required for control as new seedlings emerge annually from the seed bank.

Biological control methods are more effective for long-term control of larger populations of purple loosestrife. In North America four insects have been approved by the U. S. Department of Agriculture for use as biological control agents: the root-mining weevil *Hylobius transversovittatus*, two leaf-feeding beetles *Galerucella calmariensis* and *G. pusilla*, and the herbivorous weevil *Nanophyes marmoratus*. The impact of these introduced beetles on native, non-target species is considered low. *G. calmariensis* has provided successful control of purple loosestrife (Malecki and Blossey 1993).

Literature Cited:

Brown, B.J., R.J. Mitchell and S.A. Graham. 2002. Competition for pollination between an invasive species (purple loosestrife) and a native congener. Ecology 83(8):2328-2336.

Butterfield, C., J. Stubbendieck and J. Stumpf. 1996. Species abstracts of highly disruptive exotic plants. Northern Prairie Wildlife Research Center Online. Available: http://www.npwrc.usgs.gov/resource/plants/exoticab/effilyth.htm. (February 2008).

Gaudet, C.L., and P.A. Keddy. 1995. Competitive performance and species distribution in shortline plant communities: a comparative approach. Ecology 76(1):280-291.

ISSG (Invasive Species Specialty Group). 2006. *Lythrum salicaria* (aquatic plant, herb). Global Invasive Species Database. Available: http://www.invasivespecies.net/database/species/ecology.asp?si=93&fr=1&sts=sss. (February 2008).

Malecki, R.A. and B.Blossey. 1993. Biological control of purple loosestrife. Bioscience 43(10):680-686.

Raloff, J. 1992. From tough ruffe to quagga. Science News 142(4):56-58.

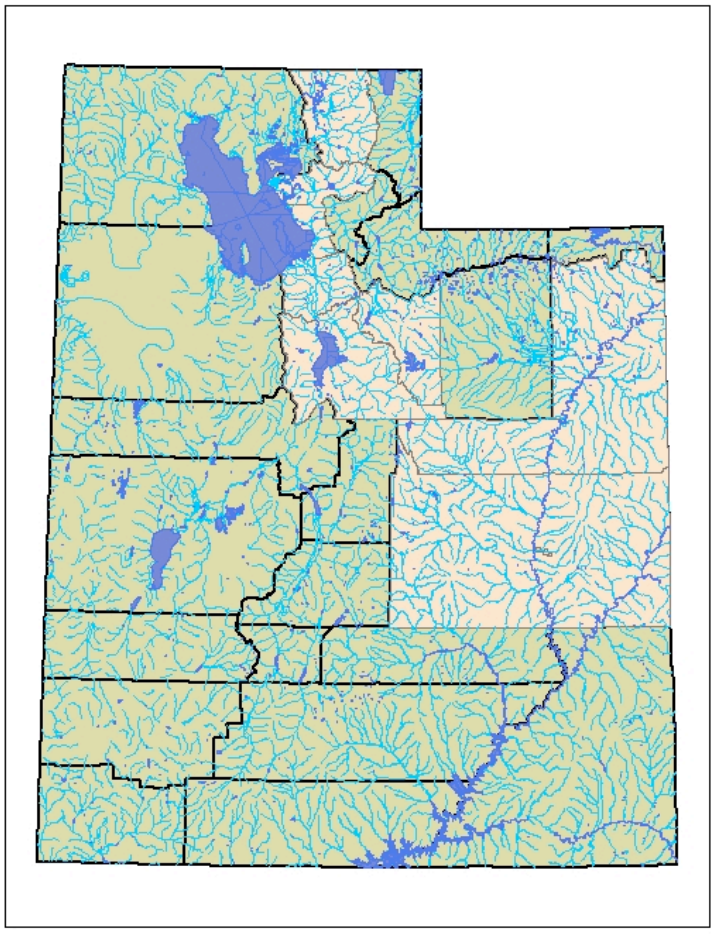
Sturtevant. 2008. *Lythrum salicaria*. USGS (U.S. Geological Society) Nonindigenous Aquatic Species Database. Available: http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=239. (February 2008).

Thompson, D.Q., R.L. Stuckey, and E.B. Thompson. 1999. Spread, impact, and control of purple loosestrife (*Lythrum salicaria*) in North American wetlands. Northern Prairie Wildlife Research Center Online. United States Fish and Wildlife Service. Available: http://www.npwrc.usgs.gov/resource/plants/loosstrf/index.htm. (February 2008).

Whitson, T.D. and others. 1996. Weeds of the West. 5th edition. University of Wyoming, Jackson, WY.

Purple Loosestrife

SGID_U500_Streams
Purple_loosestrife_Present



Paul Champion, NIWA