

Cottonwood Forests

Cottonwood forests are the only natural forests found on the generally treeless prairie. They are found mostly along river banks where there is enough moisture for large trees to survive and regenerate. These riparian (streamside) forests are the most productive type of ecosystem on the prairies and unlike other riparian forests, cottonwoods form the mature, dominant community.

Cottonwood forests are extremely important for wildlife, providing shelter and food that is not available elsewhere on the prairie. In Alberta 72% of birds found in cottonwood forests depend exclusively on these tree stands for survival. These forests also provide critical wintering habitat for deer and support some of the highest densities of white-tailed deer in Alberta.

Unfortunately, these unique forests are declining and the remaining stands are often unhealthy. The effect of altered river flows due to dams, livestock grazing, crop production, fire and urban development all contribute to the decline in cottonwood forests.

There are 3 species of poplars found in Alberta's riparian cottonwood forests and all 3 readily hybridize:

Balsam Poplar (*Populus balsamifera*)
Plains Cottonwood (*Populus deltoides*)
Narrowleaf Cottonwood (*Populus angustifolia*)

Narrowleaf
Cottonwood

Hybrids

Figure 1: Leaf shapes
of cottonwood trees
found in Alberta.

Plains Cottonwood

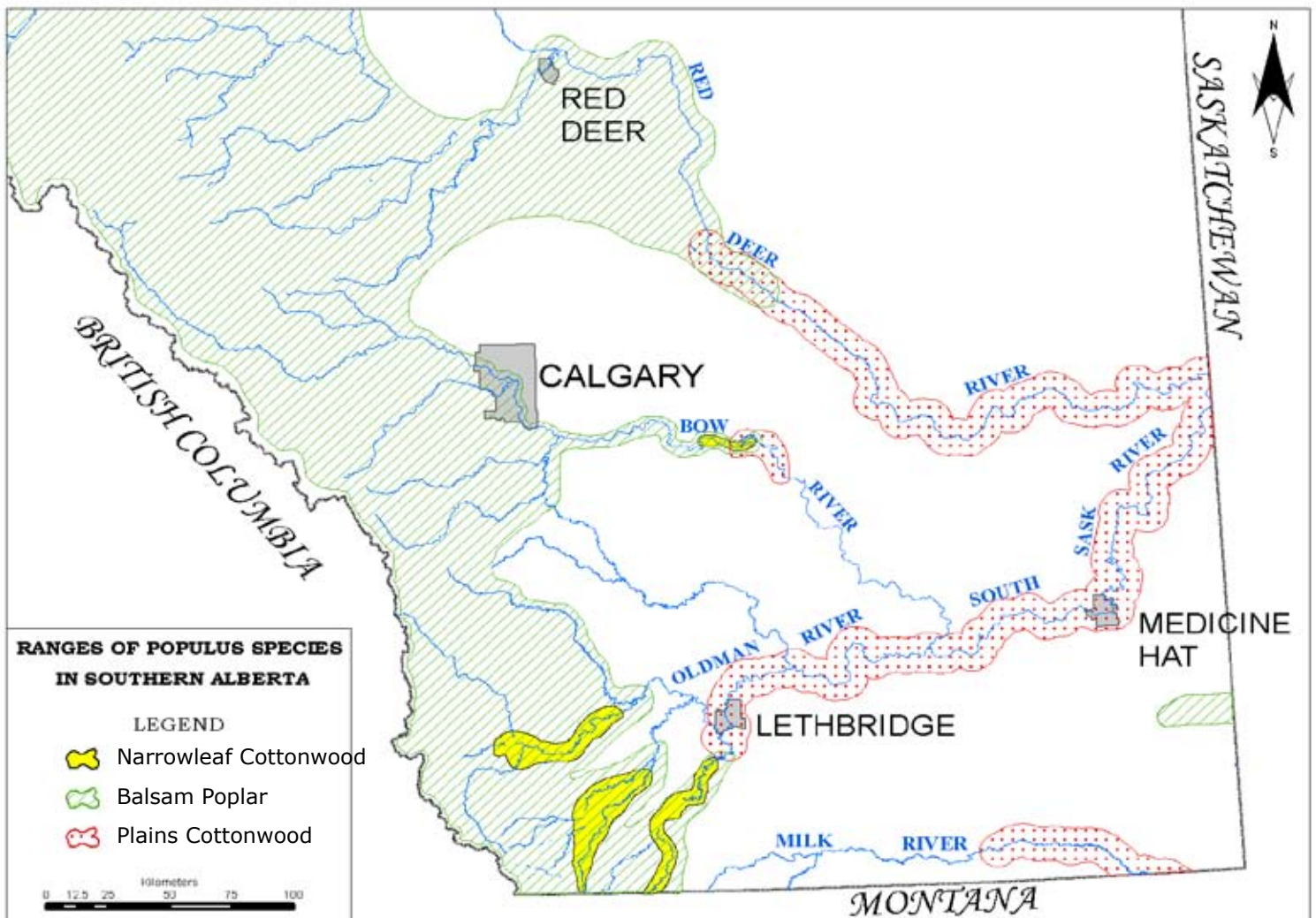
Balsam Poplar

Reproduction

- Cottonwoods release seeds from cottony balls in early spring and early summer when river flows are highest. The high river flow forms barren, moist sand bars or silt beds that are needed because cottonwood seeds are not able to out compete weeds and other plants.
- Seeds are viable for 2-4 weeks and must germinate during this time to establish.
- The site must remain moist for the first few weeks and receive lots of sunlight for the seed to germinate. Many seeds germinate but die in the first season if the seed bed dries up.
- Cottonwood stands tend to grow in bands along the river coinciding with flood years. Each band is the same age and size.
- The time interval between floods that allow new seedlings to establish may be 7-10+ years.
- Poplars are also capable of reproducing asexually (without seeds) by sprouting new shoots from their roots, stems or branches that break off and root in suitable sites.
- Cottonwoods live for 100+ years.

Distribution

Figure 2: Distribution of the 3 riparian cottonwood species found in Southern Alberta. Southwestern Alberta has the most complex hybrid zone in the world with 3 interbreeding species.



After Brayshaw, 1965.

Narrowleaf cottonwoods are found only in the southwest corner of Alberta near Lethbridge and do not exist anywhere else in Canada.

Beneficial Management Practices

Beneficial management practices for cottonwood forests are similar to riparian grazing practices because the health of the riparian zone is linked to the health of the riparian forest. However, not all riparian zones have cottonwood forests. Those that do require special management of these extremely important and unique areas.

Fencing off your entire cottonwood forest is the best decision for the forest's health. However, opportunities for other uses like livestock grazing must also be considered. Use these BMPs to help maintain the forest *and* allow it to provide you with long term benefits.

Often forests extend past the river banks. Include these areas in your careful management because these trees are just as important as those next to the river.

- Perform riparian health assessments annually and base your grazing strategy on the results. If the riparian area is not healthy allow it to rest and then reevaluate with another assessment.
- Allow many years of rest for cottonwood forests that are severely damaged. Ten years may be needed to allow several years of new seedlings to establish to form a regenerating forest. If no new seedlings are establishing, the forest will disappear as the old trees die.
- If a flood occurs do not graze your riparian forest for 2 years to allow new seeds to establish and grow strong enough to withstand grazing pressure.
- Graze with a low stocking rate and allow rest for recovery because livestock congregate in riparian forests and may overgraze them even at low or moderate stocking rates. Overgrazed riparian areas will lose their deep rooted plants leading to wider stream channels and shallower and warmer water. Shallow or tap rooted plants do not maintain bank stability.
- Create a separate riparian pasture or use a rest rotation system to allow better control over grazing schedules in pastures with cottonwood forests.
- To benefit cottonwoods grazing should take place before the peak flow occurs in the river (occurs May - mid June). After the peak flow seedlings will be establishing and will easily die if trampled or eaten. However, April and May are important months for wildlife and should also be avoided (see next point).
- Allow rest after grazing while plants are still actively growing to allow them to rebuild. Rest in the spring and early summer is especially important because stream banks are soft and wildlife are breeding and nesting.
- Provide an access point to the water with a hard surface. Fencing off everything but the access point will protect riparian health and restrict weeds and erosion to a smaller area.
- Distribute salt, off-stream water and feed away from riparian forest zones to attract cattle elsewhere. This will improve use of the adjacent range.
- Avoid grazing in autumn as riparian vegetation is more palatable than upland vegetation making it susceptible to overgrazing. Grazing after the growing season is over sets back woody species that stabilize stream banks and provide shelter for livestock.

Riparian health assessment handbooks can be obtained from Cows and Fish.

Contact Cows and Fish

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For more information please read MULTISAR's Grazing Factsheet in your binder or online at www.multisar.ca. Refer to the Riparian Grazing section.

Importance

Water Quality and River Stability

Cottonwoods are an integral part of many riparian zones in Alberta and contribute to good water quality, bank stability, trapping of sediment and maintaining plant diversity. Riparian areas require diverse, multilayered vegetation to function. Plants with deep, fibrous roots provide stability and woody species provide roots for anchoring soil and woody debris for fish habitat.



Lorne Fitch

Wildlife

Cottonwoods are vital for wildlife such as deer, birds, grouse, bats and waterfowl. Breeding bird populations can be up to 7 times higher in riparian zones compared to the surrounding uplands and 80% of birds in Alberta use riparian zones for part of their life cycle. Cottonwoods provide unique features such as holes for cavity nesting birds, tall branches for birds that only nest at high elevations and roosting sites for migratory birds that require trees. Cottonwoods also provide shade for the river, overhangs for fish habitat and microclimates that allow plants and animals to survive where they otherwise could not.



Liz Saunders

Recreation and Aesthetics

Cottonwood forests are used for recreational activities such as hiking, picnicking, camping and cycling. People flock to these forests for their beauty and uniqueness on the redundant prairie landscape. Most urban parks are centred on the river valleys because they contain cottonwood forests.



John Mahoney

Cultural and Spiritual

Cottonwood forests are very important to First Nations and in the past were vital to the survival of early settlers. They used the forests for shelter and firewood. The Blackfoot set up their winter camps in these forests and held traditional ceremonies in them, which they continue to do today.

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