

Select riparian photo-pairs
from the Dead Indian Plateau
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Photo-pair 1: This photo-pair within the Box O Ranch Enclosure shows the development of riparian vegetation since the cessation of grazing in 1994. Other photo-pairs indicate cut-banks from the 1974 flood show little improvement between 1974 and 1995. This area showed considerable displacement of yellow starthistle by annual and perennial grasses.



Photo-pair 2: This photo-pair within the Box O Ranch shows riparian willows invading the pasture in an area where beaver have elevated the water-table. The riparian vegetation is generally unable to escape the confines of the watercourse in areas with no beaver activity.



Photo-pair 3: This repeat photo of Fredenberg Meadow shows willow thickets that cycle in willow abundance with the rise and fall of beaver activity, in turn dependent on willow as a food-source.



Photo-pair 4: This photo-pair from the Conde Exclosure shows the degeneration of mature aspen canopy and development of a new aspen understory through vegetative reproduction. Other riparian shrubs (*Spirea douglasii*) have increased in canopy cover.



Photo-pair 5: This grazed repeat photos is paired to the Conde Creek Exclosure and shows little increase in shrub or grass cover.



Photo-pair 6: This photo-pair is taken a few hundred meters upstream of the Conde Exclosure. Logs placed within the riparian area did little to catch sediments and improve riparian condition in the continued presence of livestock and elk. Water flowed around logs creating new points of erosion. The rock berms of the Hoxie Creek Exclosure remained intact with winter/spring water-flow, trapping sediments and allowing the growth of willow and sedges within the water-course. This photo-pair also serves as a grazed counterpart to the Dead Indian Exclosure.



Photo-pair 7: Photos taken within the Dead Indian Creek Exclosure show an increase in decadence of remaining aspen not felled by beaver. Missing trees were felled by beaver at the time of the original photos, despite protection with wire mesh. The felling of the trees took place adjacent a beaver lodge. The aspen stand depicted in this photo-pair has a thick understory of young aspen sprouts from the roots of existing trees. Both the felling and elevated water-table may have contributed to the vegetative reproduction by the aspen. Photos generally show greater abundances of forbs and willows. Beaver activity is noted throughout this exclosure.



Photo-pair 8: Photo pairs within the lower Hoxie Creek Exclosure show an increase in willow abundance within the watercourse. Areas outside of the watercourse show little change, likely as a result of repeat livestock trespass and compacted soils from livestock use prior to the construction of the exclosure.



Photo-pair 9: This paired grazed paired to the Hoxie Creek Exclosure shows a small increase in willow abundance. The apparent loss in California hellebore is due to a difference in phenology between photos, not a loss from the site. Conifer and shrubs have established on rotting debris visible in old and new photographs.



Photo-pair 10: Photo-pairs within the upstream Hoxie Creek Exclosure show an increase in extent and stature of shrubs (*Spirea douglasii*), and an increased abundance of grasses under the conifers. The increase in grass abundance may be due to reduced grazing as well as increased light availability as a consequence of the conifer die-back.



Photo-pair 11: This photo-pair within the lower Jenny Creek area shows a tremendous increase in the abundance of willows. Emergent riparian vegetation and forbs along Jenny Creek has increased throughout this currently little grazed riparian pasture. This rapid recovery contrasts to slower change in exclosures dominated by alluvial soils, such as the Schoolhouse Meadow Exclosure. Rushes and sedges along springs draining into Jenny Creek show less bare earth and more riparian obligate vegetation. Boulders in the foreground are obscured by herbaceous vegetation and accumulated litter.



Photo-pair 12: Riparian shrubs (willow and white alder), sedges and forbs have increased in abundance within the northern portion of the little grazed Jenny Creek Riparian Pasture.



Photo-pair 13: This site on Keene Creek is paired to the Jenny Creek Riparian Pasture and shows a recovery of riparian willow since the 1974 flood, but little development of a riparian herbaceous layer. Note that this is a high livestock use area.



Photo-pair 14: This site is paired to the lower Jenny Creek Riparian Pasture, and shows the recovery of riparian willow vegetation equal to paired photos within the more protected pasture.



Photo-pair 15: This area along Keene creek shows some regrowth of riparian shrubs, but not as extensively as within the Jenny Creek Riparian Pasture and paired sites. In general, sites with less cobble show less growth of riparian woody vegetation.



Photo-pair 16: This paired photo within the Schoolhouse Meadow shows an increase in the complexity of riparian vegetation. The recent repeat photo shows a mix of riparian shrubs, sedges and forbs. The riparian obligate vegetation does not appear to have spread beyond the confines of the cut bank, perhaps because of soil compaction by livestock prior to fencing.



Photo-pair 17: This grazed photo-site paired with the Schoolhouse Meadow Exclosure shows greater abundance of herbaceous foliage in the recent photo, perhaps as a consequence of its ungrazed state prior to the advent of the grazing season. The yellow-flowered forb within both photos suggests a similar stage of phenology. The white flowered Forb is watercress (*Rorippa sp.*).



Photo-pair 18: Within the Agata Flat Exclosure, this photo-pair shows an accumulation of wetland obligate species (cat-tails and willow). Yellow starthistle can still be found on sediments recently excavated from the pond, but are largely absent from the exclosure. This site was scarified and seeded following the 1974 fire.



Photo-pair 19: This photo-pair from the Dead Horse Exclosure in the Oregon Gulch Pasture of the Soda mountain Allotment shows the establishment of riparian obligate vegetation (sedges and rushes) constrained by steep droughty banks and deep water. Live vegetation and litter screen the rocks visible within the ephemeral channel behind the stockpond. Note that mistletoe has greatly increased in the oak tree visible to the left of the watercourse.



Photo-pair 20: Paired to photo pair 18 in the Agate Flat Exclosure, this photo-pair shows the recovery of shrub vegetation following the 1974 fire and post fire restoration activities (scarification and seed application). There is little obligate riparian vegetation compared to the exclosure, and yellow starthistle is encountered throughout this area. The riparian vegetation is dominated by grazing resistant rushes.



Photo-pair 21: This photo-pair of Johnson Creek shows an increase in riparian shrubs and grasses over time. Ponderosa pine and upland shrubs have also increased in abundance higher up on the stream bank. This area continues to be grazed by livestock, and serves as an example of vegetation recovery within cobbly terrain. While boulders scour the Water-course, they also protect propagules and newly establishing vegetation from grazing by native and non-native ungulates.



Photo-pair 22: This repeat-photo on Hutton Creek shows an area of an active Allotment/Pasture that receives less use by livestock than at the time of the original photo. The increase in native perennial grasses along the watercourse is readily apparent.



Photo-pair 23: Riparian hardwoods have increased in the Parsnip Lakes area since the original undated photograph. This area has not burnt for many decades, nor is it prone to floods that scour the riparian area. The most likely factor allowing the return of hardwoods is improved management of livestock. Note that the historic photo could not be retaken from the original position because of the dense vegetation now obscuring the field of view.



Photo-set 24: While these photos are not a photo-pair, they do illustrate the spread of aspen by root sprouts beyond the original enclosure. This site is not prone to scouring floods, and has not been burnt for many decades. The increased decadence of aspen throughout the landscape, and subsequent vegetative regeneration is a common observation inside and outside of livestock exclosures on the Dead Indian Plateau.