Yakama Nation's Wetlands and Riparian Restoration Project

Project Number 1992-06200

2016 Annual Report

Submitted to:
Bonneville Power Administration

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Black tailed deer near Satus Creek in shrub habitat. Photo by David Blodgett III.

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Introduction

This is the annual activities report for the Lower Yakima Valley Riparian and Wetland Restoration Project, project number 1992-06200. Under this project, the Yakama Nation Wildlife Program protects, restores, and manages land to mitigate for wildlife habitat losses incurred during construction and operation of the McNary, John Day, the Dalles, and Bonneville dams on the lower Columbia River. An important goal of the project is to protect and manage 27,000 acres of wildlife habitat in the Yakama Reservation. To date 21,500 acres have been protected.

This report conveys the highlights of calendar year 2016, from January 1st, 2016 to December 31st, 2016. For other activities and further details please consult the Pisces scope of work and status reports.

Land Securing Activities

In fiscal year 2016 the project's land protection continued with a Perpetual Land Use Agreement (PLUA) for newly protected land along Toppenish Creek. The process for this lease was initiated with a farm plan and lease application. Although it may take the Yakima Nation Land Enterprise some time to completely process the PLUA, control of the parcels now rests with the Yakama Wildlife Program and we will begin assessing the parcels immediately for restoration and management planning. This land adds 100 acres of high quality wetlands and uplands habitat to the project's permanently protected land base.

Island Road new parcels, 46°19'29.26", -120°33'43.03" and 46°20'14.42", -120°33'35.10")
This PLUA is adjacent to the existing Island Road Wildlife Area (West Toppenish Wildlife Reserve) and extends the contiguous protected floodplain area. It occupies the Toppenish Creek floodplain, and contains approximately 50 acres of wetland and 50 acres of upland habitat, including some open water associated with the south channel of Toppenish Creek. This PLUA protects 0.5 miles of the North Channel of Toppenish Creek and 0.9 miles of the South channel of Toppenish Creek, which are both seasonally connected abandoned side channels.

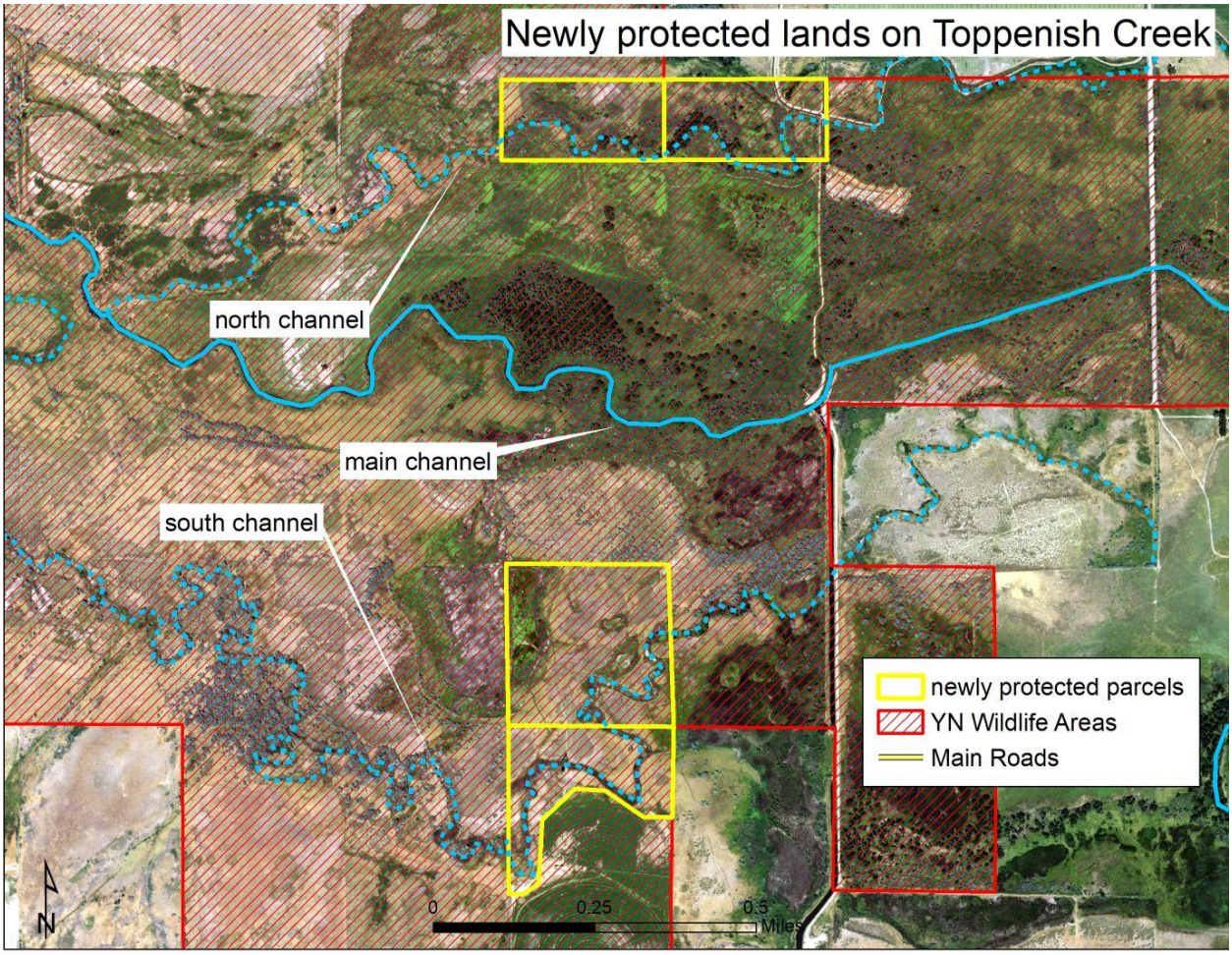


Figure 1. Newly protected parcels along Toppenish Creek

Hydrological Restoration Activities

Planning for North Satus Drain Project

Planning activities continued for the North Satus Drain wetland enhancement. The objective of the project is to re-route the North Satus Drain, an agricultural drain which currently discharges directly into steelhead bearing portions of Satus Creek, through wetlands in the Satus Wildlife Area. The project is expected to improve water quality in 3.3 miles of Satus Creek and enhance over 100 acres of wetlands. It will be funded using an NRCS grant, with some funding for design from BPA. Construction is expected to begin in 2018 and be completed by fall of 2019.

Floodplain Vegetation Restoration Activities

The Yakama Nation Wildlife Program focuses on creating sustainable native habitat that provides a variety of wildlife, cultural and natural resource values. Terrestrial vegetation restoration and management occurs on an estimated 500-1,000 acres per year within the project area. Intensive restoration activities require approximately five years of higher labor and materials costs, followed by smaller maintenance costs needed to prevent re-infestation of noxious weeds.

Sites vary widely in their hydrology and vegetation. Properties also vary in their use history; some properties were homesteads, others were farmed and still others were grazed or used as stockyards. The broad steps involved are site preparation, weed control, revegetation with grasses, and reintroduction of forbs and shrubs. The methods used are selected to reduce initial construction costs as well as long-term maintenance costs.

Pre-planting weed control typically occurs for 1-3 years to control or suppress weed species required to allow native plant establishment. Native grasses adapted to particular site conditions are seeded using rangeland drills in the fall prior to rains. Genetically local seed sources of Basin wildrye (*Elymus cinereus*), bluebunch wheatgrass (*Pseudoregneria spicata*), and squirreltail (*Elymus elymoides*) are available; these species were collected from the Reservation and are propagated as a seed crop by a regional seed producer. Occasionally, funding is supplemented by NRCS grants such as the Wildlife Habitat Improvement Program or groups such as Pheasants Forever funding for purchase of native grass seed. Post-planting weed control generally is required for 1-2 years as slow-growing species native to the arid west become established. Upland native shrubs and forbs may be reintroduced after native grasses are established. Costs per acre are kept to a minimum by utilizing large-scale agricultural methods and rotating weed control techniques to reduce chemical herbicide use.

Site preparation

- removal of structures, debris and interior fences
- construction of interior or exterior fences to exclude trespass cattle
- removal of invasive trees that prevent restoration

Weed control

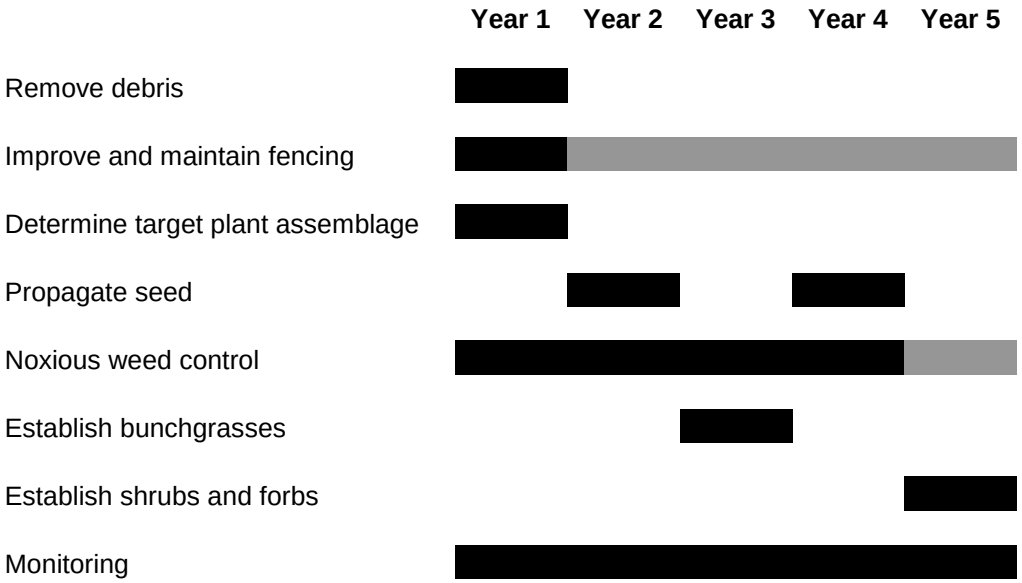
- weed control prior to revegetation
  - 1-3 years pre-treatment for perennial/difficult to control weeds
  - 1 year treatment for annual weeds
- weed control after revegetation
  - 1-3 years treatment during grass establishment to control broadleaf weeds.
- includes mowing, disking, broadcast spray of herbicides and hand spray of herbicides.

Revegetation

- native bunchgrasses are introduced after weeds are successfully suppressed
- native forbs and shrubs are introduced after grass establishment is successful
- grasses and shrubs grow very slowly in our region (6-9" average precipitation), especially with deeper water tables'

The table below illustrates the average timeline for floodplain terrace restoration projects:

Table 1. restoration timeline



Terrestrial vegetation restoration activities occurred on approximately 920 acres in the project area, which included site preparation (removal of internal fences and debris, improvement of property boundary fences, and site-specific weed control) and native plant revegetation (seeding and planting native bunchgrasses and shrubs).

Table 2: sites under restoration with restoration phase and acreage

site	restoration phase	acres
Island Road	weed control	50
Island Road south	weed control	120
Grahams east	site prep/weed control	70
Grahams west	site prep/weed control	90

Grahams central	site prep/weed control	40
Shattuck	weed control	250
	total acres	**620**

Invasive Plant Species Control Activities

Noxious weeds are one of the primary threats to terrestrial habitats under this project, and thus weed management is a focal maintenance activity. General noxious weed control is one of the most cost-effective methods of protecting habitats from degradation. Weed management is a broad approach to protecting and restoring habitats for wildlife. In remote areas or relatively undisturbed areas, weed management includes treatment of noxious weed populations as they are located, or as they occur, and preventing weed populations from expanding into uninfested areas. Where habitats have high resource values, such as riparian corridors and wildlife movement corridors, but where the habitats are moderately to severely degraded, weed management is achieved through habitat restoration to native species that assist with long-term suppression of noxious weeds.

Our approach to prioritizing weed management is summarized by the chart below.

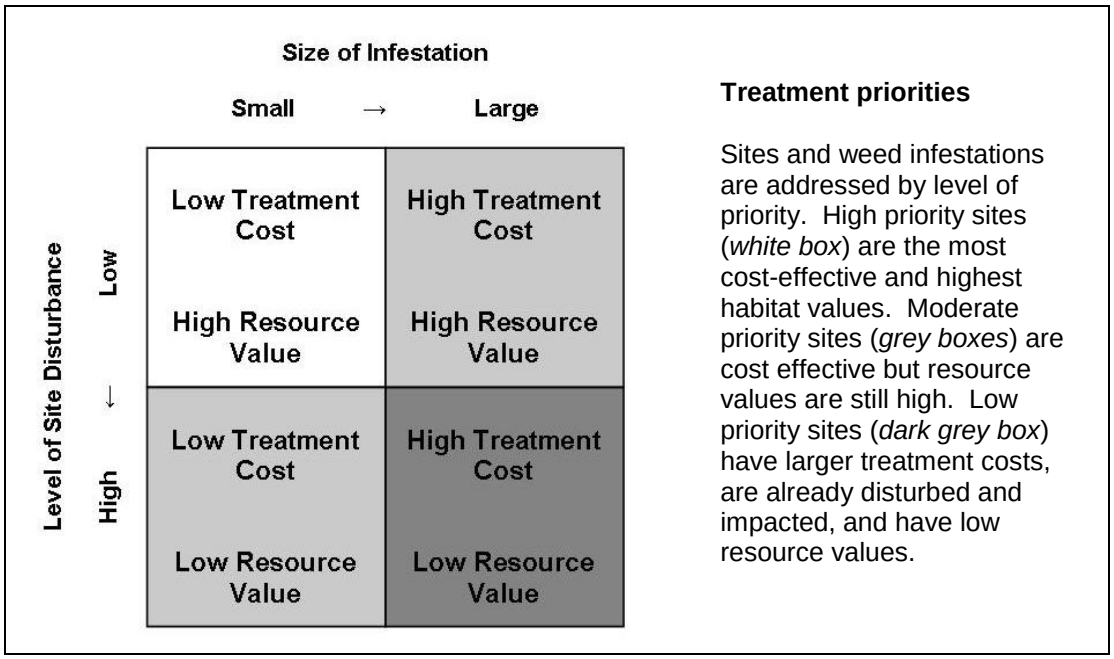


Figure 2: Approach for prioritizing weed management.

Weed treatments are selected based on site conditions and weed species' biology. Weed management activities include the following actions.

Mapping

Weed mapping is a critical component of invasive species management. Target weeds are mapped on selected properties using GPS units. Data is recorded and analyzed in a Geographical Information System.

Chemical treatment

Herbicide treatments (used in accordance with BPA policies on herbicides and adjuvants) are generally highly effective and more cost-effective than mechanical or manual methods for many species. Weed suppression may require 1-5 years of treatment to eliminate weed infestations. Due to the location of floodplain and riparian habitats of the over 21,000 project acres within a larger agricultural setting, ongoing surveys and weed treatment of new infestations is required.

Mechanical removal

Mechanical removal has proved to be effective for the removal of mature Russian olive trees. This method entails using an excavator to pluck Russian olive trees in late summer and fall when presumably the trees are drought-stressed. The excavator is operated extremely carefully so as to minimize ground disturbance. To date, resprouting of Russian olive has been minimal using this method.

Habitat restoration

Restoration includes reintroduction of native species that assist with suppression of noxious weed species. Restoration requires a higher short-term cost input than chemical treatment, but results in lower long-term maintenance costs. Restoration typically requires a minimum five-year investment to reach weed suppression. Restoration is addressed in detail under the heading "Vegetation Restoration for Weed Suppression". Information about grazing management is reported in the Floodplain Vegetation Restoration Activities section of this report.

Grazing management

Grazing includes weed suppression using domestic livestock in areas where habitat restoration in the short-term is not feasible. For example, a property infested with noxious weeds that requires hydrologic restoration is a good candidate for grazing management. When hydrologic features are improved, resulting in higher water table, habitat restoration is feasible. In the interim, grazing management is a very cost-effective tool to prevent noxious weeds from expanding. Grazing management prescriptions are developed and local ranchers selected to implement prescriptions at no cost. Information about grazing management is reported in the Vegetation Management section of this report.

In 2016, project-wide invasive plant control took place across approximately 4,700 acres of managed properties. This included use of herbicide spray and mechanical removal of Russian olive. All herbicide spraying was approved and reported through the BPA herbicide reporting process. The following species were targeted for control over their respective acres. Species treatment areas overlap so the acres do not sum to the total acres treated. These control activities are separate and distinct from weed control on sites that are under active restoration.

Table 3. Invasive species targeted for control in non-restoration areas

species	acres
Russian olive (*Elaeagnus angustifolia*)	2,000
Scotch thistle (*Onopordum acanthium*)	1,000
poison hemlock (*Conium maculatum*)	500
goatheads (*Tribulus terrestris*).	10

Vegetation Management Activities

In order to maintain habitat values, ongoing management of native vegetation communities is needed. This is necessary and important because of altered ecological processes, including disturbance regimes, relative to pre-European conditions. For example, freshwater wetlands most likely experience less disturbance in the form of fire and trampling by large ungulates than in historical times; therefore management activities such as managed burns, mowing, controlled grazing, and tilling must be used to maintain desired habitat conditions. The tables below show the objective for each type of management actions, and units and acres with respect to each type of management action.

Table 4. Objectives for each management action

action	habitat type	objective
Burning	wetlands	remove biomass, accelerate nutrient cycling, increase vegetation diversity
	uplands	remove biomass, accelerate nutrient cycling, rejuvenate dominant grasses
Mowing	wetlands	reduce cover of dominants, remove biomass (when hay is baled), increase vegetation diversity
Managed grazing	Reed canary (*Phalaris arundinaceae*)grass dominated wetlands	increase open water habitat by reducing vegetation height and density
Managed grazing	uplands	suppress invasive species
Tilling	wetlands	increase open water habitat, decrease cover of dominant monocots, increase vegetation diversity

Table 5. Vegetation Management Activities by management unit and acres

activity	management unit	acres	note
burning (follow up)	No burning follow up was conducted in 2016		
burning (initial burn)	No initial burning was conducted in 2016		
burning (Russian Olive piles)	Island Road (continued from 2015)	1	burn piles of pulled Russian Olive trees
	total acres burned	**62**	

mowing	Carl Property	65	
	South Lateral A	115	
	Satus Wildlife Area	410	
	Campbell Road	140	
	Old Goldendale	70	
	Island Road	30	
	total acres mowed	**830**	
managed grazing	Island Road	875	
	Olney Flat Drain	115	
	Campbell Road	130	
	Satus Wildlife Area	1660	
	Carl Property	70	
	Yost Road	155	
	total acres grazed	**3005**	
tilling	Island Road	33	For weed control

Cost Share

Each year staff of the Yakama Nation Wildlife program actively seek grants to complement BPA funding and to accelerate the pace of hydrological and vegetation restoration. In 2015-2016 we were successful in being awarded grants from the Yakima Basin Integrated Plan and from the Natural Resources Conservation Service. These totaled $1,250,000 and included:

$600,000 from the Yakima Integrated Plan for aquifer recharge on the Toppenish Creek Fan. The project, which was implemented by the Yakama Nation Department of Natural Resources, is situated in the footprint of the Lower Yakima Valley Riparian and Wetlands Restoration Project and will increase water supply for riparian and wetland habitat on the Toppenish Creek fan, as well as provide increased groundwater levels throughout the Toppenish Creek fan.

$650,000 from the RCPP for wetlands enhancement on the Satus North Drain and floodplain restoration on lower Satus Creek. This project will re-route the Satus North Drain into the Satus Wildlife Area with benefits for wetlands and for steelhead habitat in Satus Creek.

In addition, in 2016 we were awarded $21,967 in funding from Washington Department of Agriculture for aquatic weed control, and $32,000 from the Bureau of Indian Affairs for noxious weed control.

Wildlife Surveys

The Yakama Nation Wildlife Resource Management Program (YNWRMP) conducts wildlife surveys in the valley portion of the Yakama Reservation. These surveys provide an index to wildlife populations. They also provide information on wildlife responses to our restoration efforts. Although most surveys are conducted through the whole valley, wildlife trends on or near properties managed by the YNWRMP show a positive trend in wildlife numbers.

Waterfowl Breeding Pair Counts

We conduct waterfowl breeding pair annually during the second week of May. These counts are conducted at 14 different sites. These counts allow us to monitor duck responses to our restoration efforts and make proper management decisions. Results from these counts indicate that the total number of breeding pairs of dabbling ducks has increased since 1955 (Figure 6). This increase has been evident in teal (Figure 3), whereas Wood Duck (Figure 4) and Mallard (Figure 5) numbers have remained relatively constant.

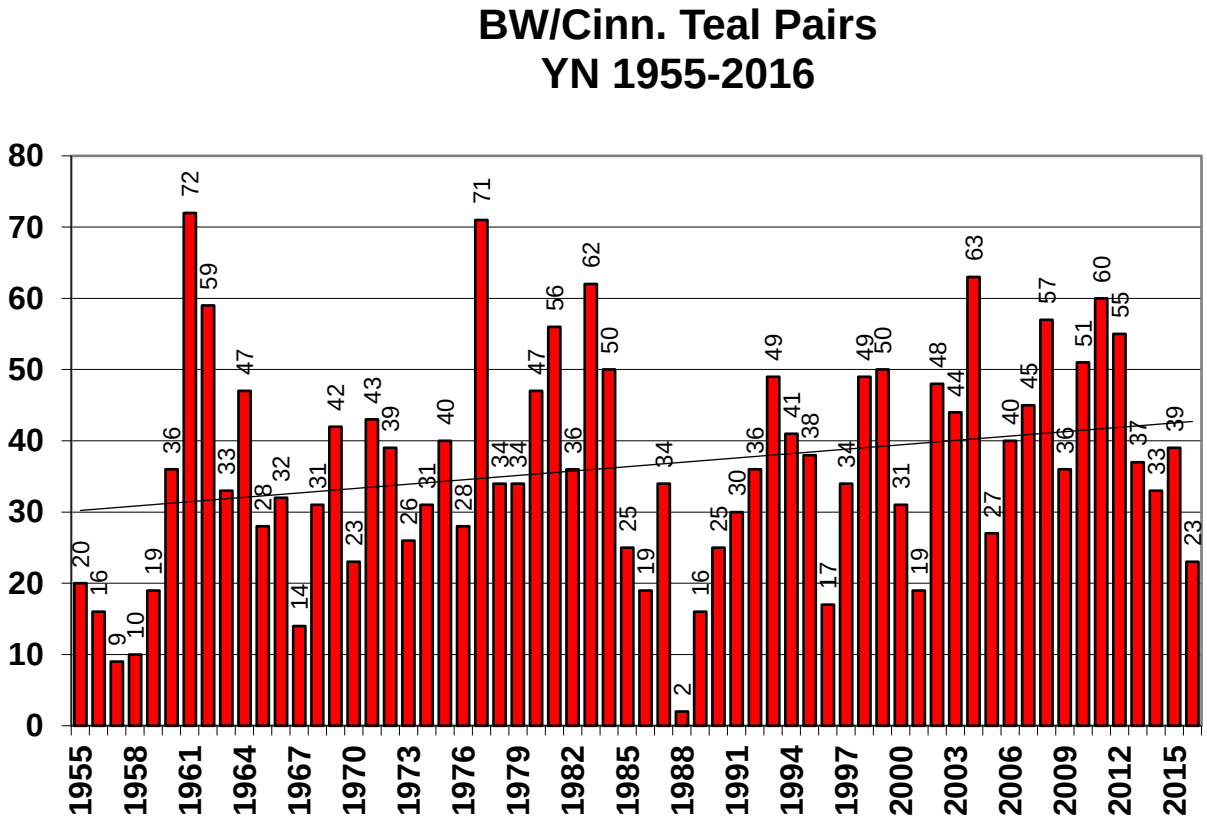


Figure 3: Number of breeding pairs of Blue Wing and Cinnamon Teal observed during counts conducted from 1955-2016 on the Yakama Reservation.

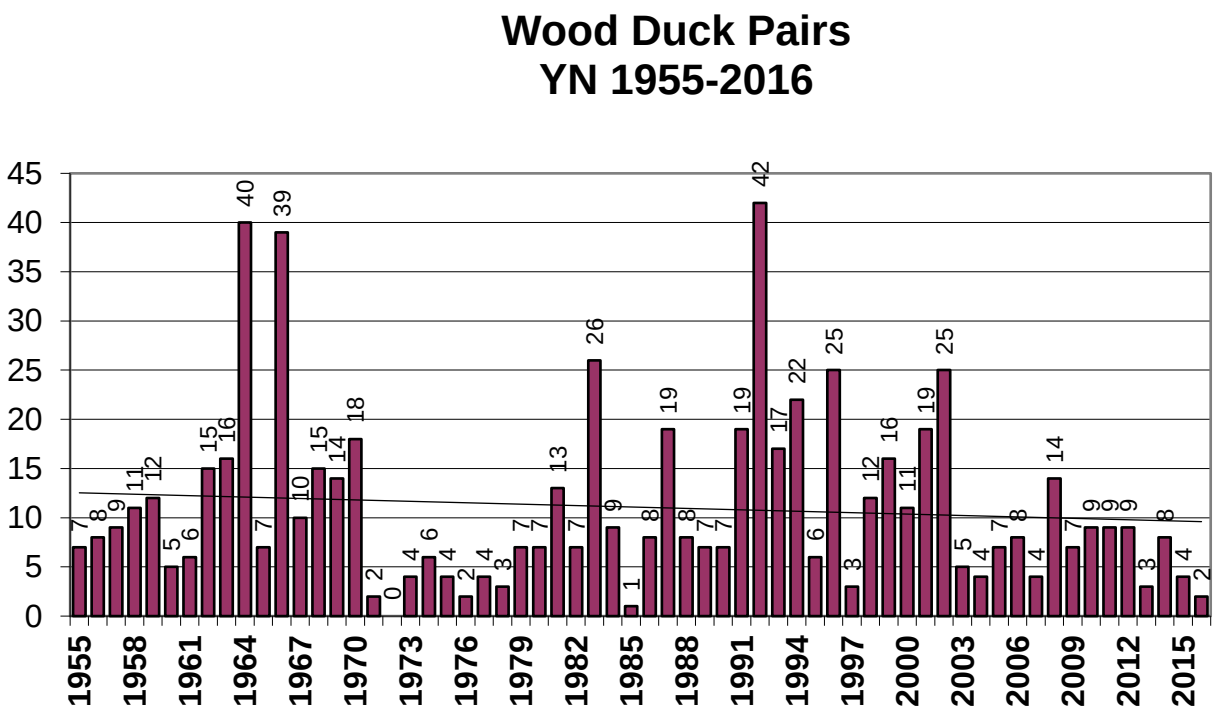


Figure 4: Number of breeding pairs of Wood Duck observed during counts conducted from 1955-2016 on the Yakama Reservation.

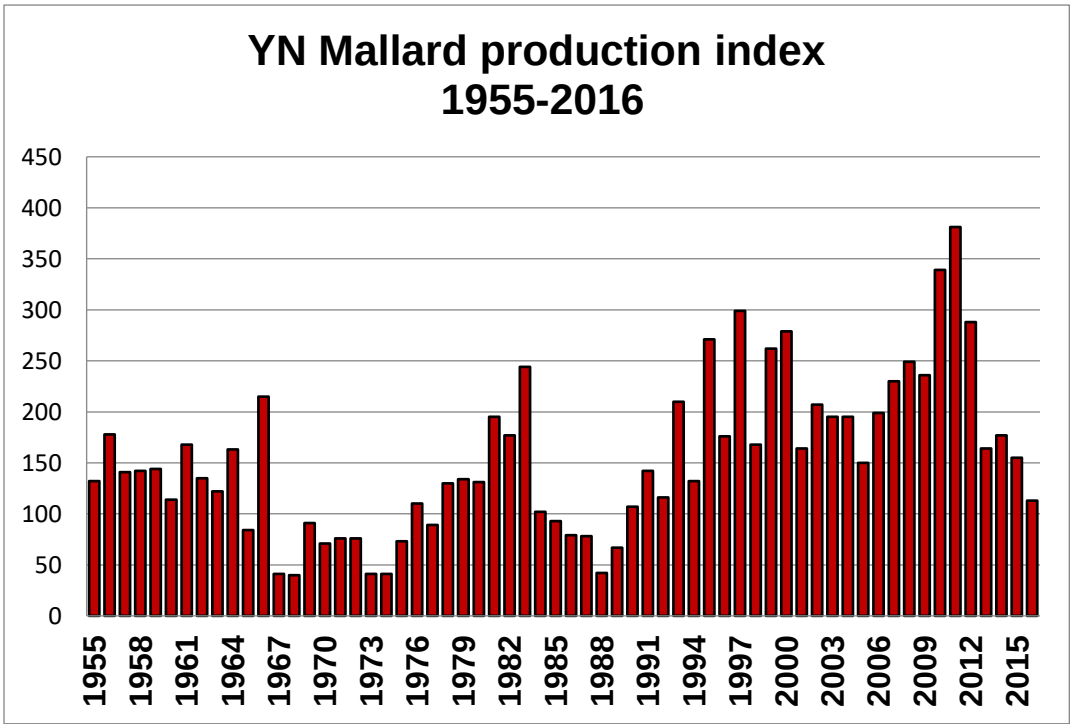


Figure 5. Number of breeding pairs of Mallards observed during counts conducted from 1955-2014 on the Yakama Reservation

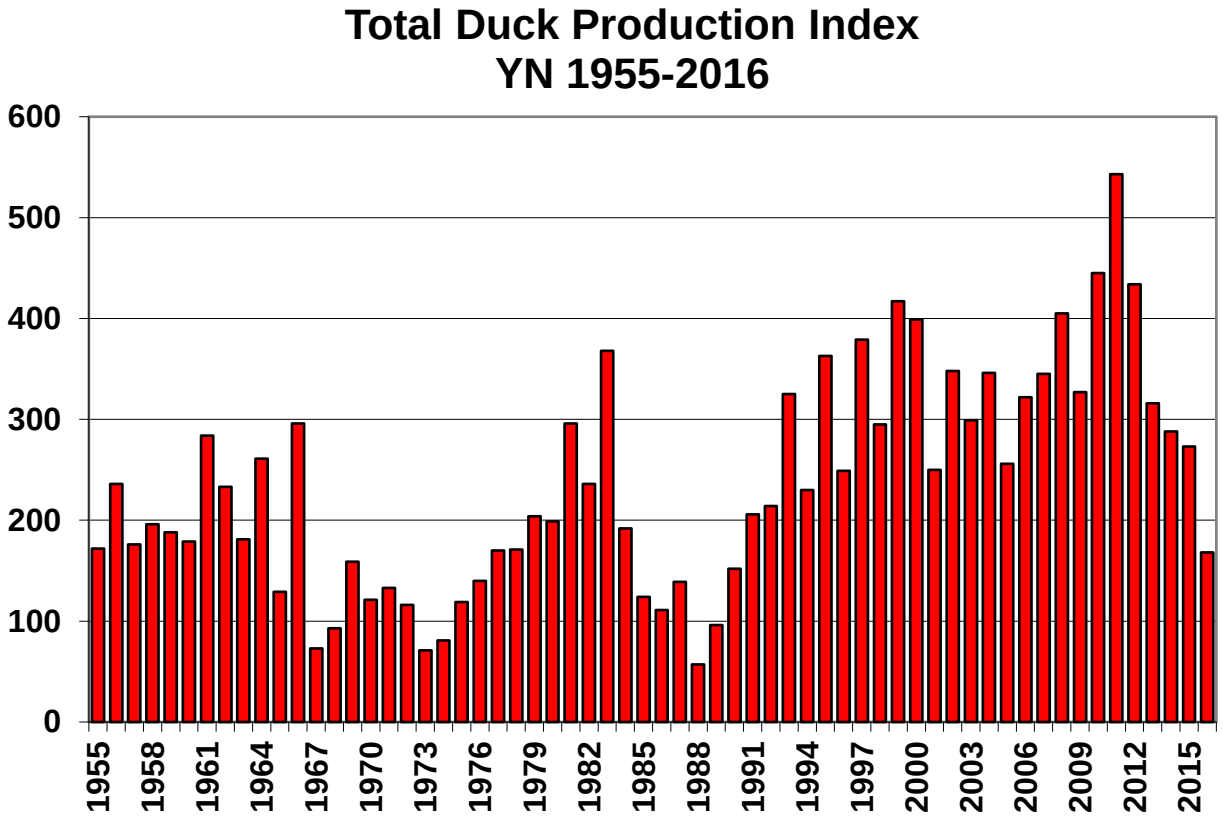


Figure 6. Number of breeding pairs of dabbling ducks observed during counts conducted from 1955-2014 on the Yakama Reservation

Upland Game Bird Brood Counts

During the last 2 weeks of July and the first week of August, we conduct annual counts of ring-necked pheasant, and California quail broods to index population levels. These counts are done on 4 standardized routes once a week. Quail counts indicate that populations dropped from the highs of the previous years; however the population estimate is still higher than the 1990's (Figure 7). The number of doves seen per mile also dropped from the previous year but still numbers are relatively high (Figure 8). The number of pheasants seen per mile have remained relatively stable (Figure 9). Pheasant population estimates have been declining since we began monitoring the populations. Reasons for the decline are unclear however changes in agricultural practices may have detrimental impacts on pheasant populations.

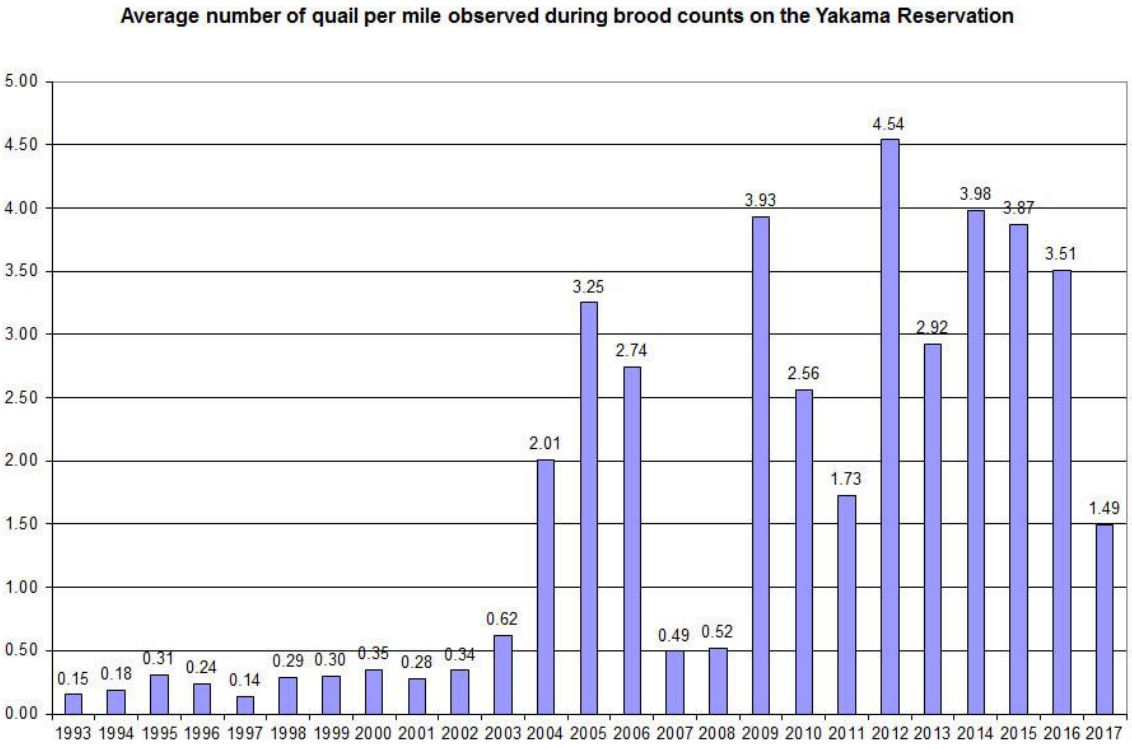


Figure 7. Average number of California Quail seen per mile on the Yakama Reservation in Washington from 1993 through 2017

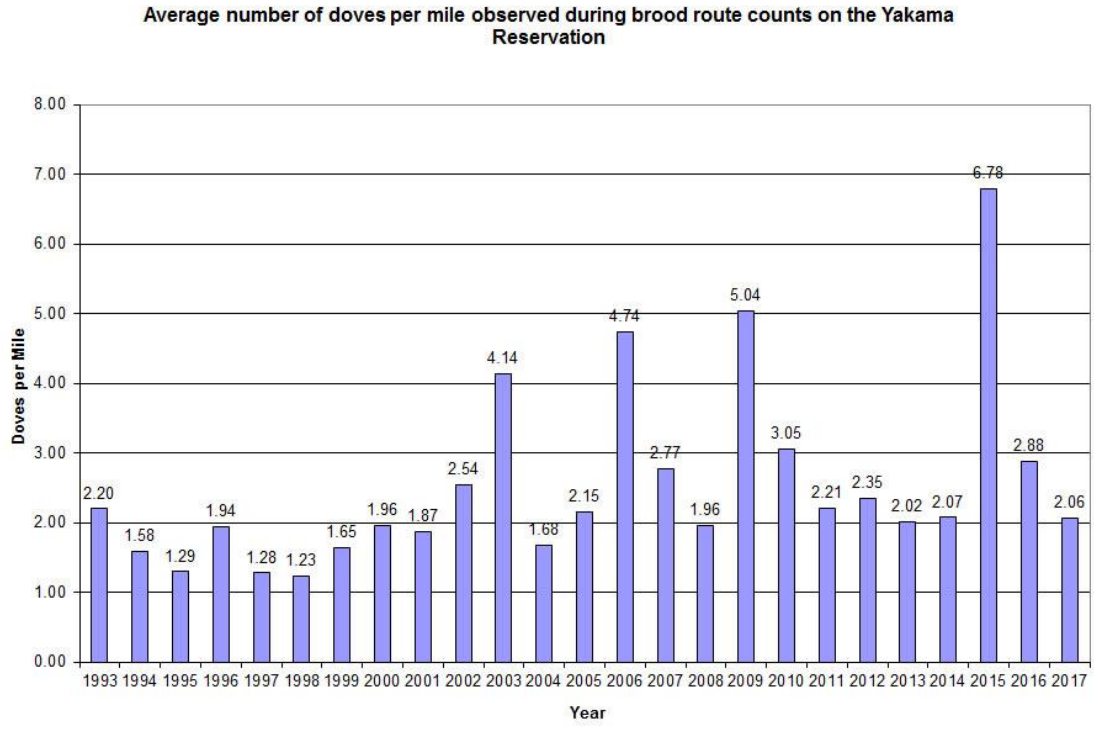


Figure 8. Average number of mourning doves seen per mile on the Yakama Reservation in Washington from 1993 through 2017.

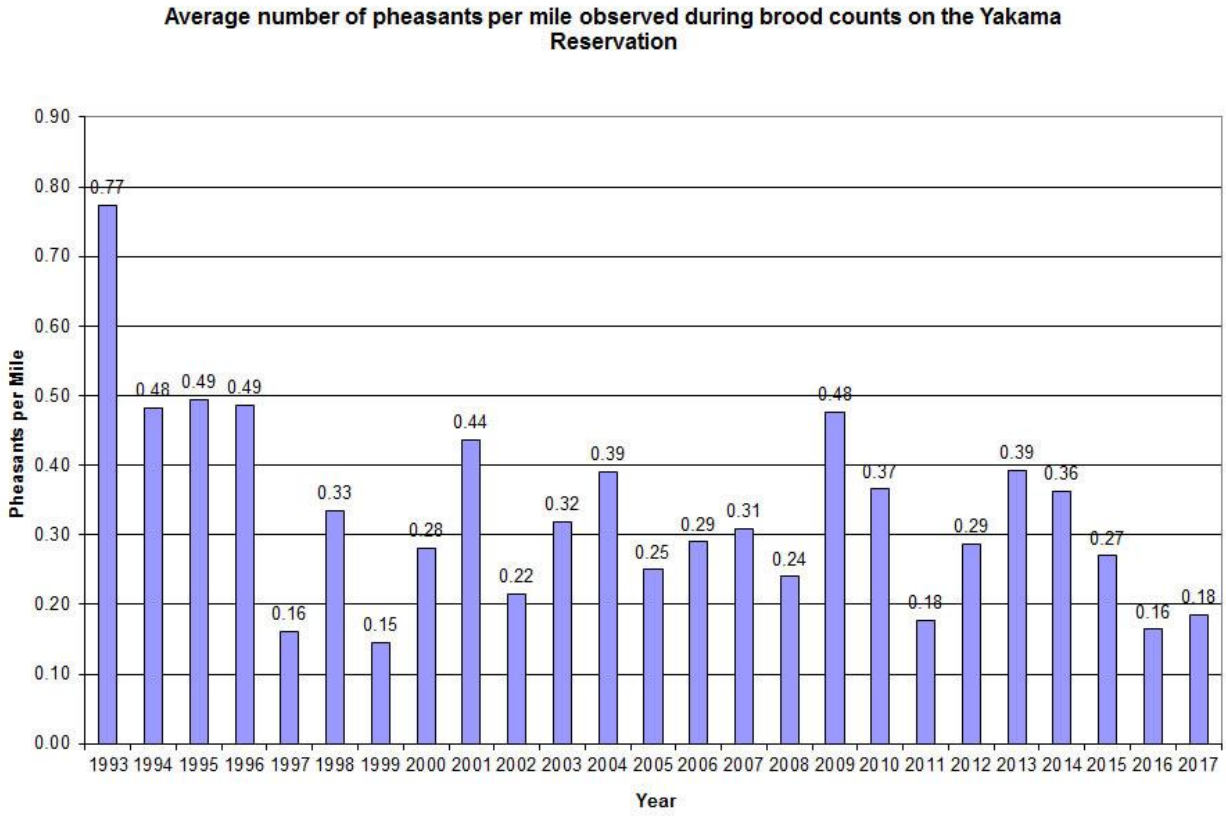


Figure 9. Average number of pheasants seen per mile on the Yakama Reservation in Washington from 1993 through 2017.