A HISTORICAL SYNOPSIS OF WHAT’S BEEN HAPPENING IN THE NORTH AMERICAN “DUCK FACTORY”!

Kenneth F. Higgins¹ (Retired), David C. Parris², and Lora B. Perkins³*

¹Department of Natural Resource Management
South Dakota State University
Brookings, SD 57007
²New Jersey State Museum
Trenton, NJ 08625
³Corresponding author email: lora.perkins@sdstate.edu

ABSTRACT

Our goal is to provide historical perspectives about some land use and land management changes in the North American “Duck Factory” area of North America.

Keywords

Waterfowl, agricultural practices, South Dakota, Duck Factory area, farm demographic trends

INTRODUCTION

Based on prehistoric artifacts, paleontologists have provided evidence that waterfowl species occurred in prehistoric areas within our current day “Duck Factory” landscapes as early as 30-60 million years ago (Parris and Higgins 2010). Duck factory refers to the area of high productivity of ducks and other waterfowl in South Dakota, North Dakota, Minnesota, Montana, Manitoba, and Saskatchewan. Through geologic time, the native landscapes of today were formed by periods of glaciation and non-glaciation which occurred between 12- and 16-thousand years ago. Waterfowl species survived evolutionally when many other fauna did not.

Life-cycle requirements of today’s duck species include open water, abundant nesting habitats, ample food supplies, and the capability to avoid predators and hunters as well as extreme weather events. Morphologically, ducks possess features that facilitate their survival through seasons and years, including webbed feet, hard-shelled eggs, flat bills, downy feathers, wings for flight (migrations), and a gizzard to grind food items. Additionally, ducks have the mental capability to migrate long distances between major summer and winter habitats and to home back to their natal nesting and aquatic habitat sites.
The landscape of the Duck Factory that we recognize today is an artifact of the last period of major glaciers, all of which melted away circa 16,000-20,000 years ago. In the wake of these glaciers, the resulting land areas were eventually converted to a landscape (approximately 300,000 square miles or 750,000 square km) dominated by native grasslands and parklands that contained millions of shallow wetlands, all of which provided the functional elements necessary for the Duck Factory’s productivity. Eventually, the landscape in the Duck Factory evolved into zones of short-, mid-, and tall-grass habitats intermixed with natural wetland types and outcrops of Aspen Parklands and other assemblages of woody shrub lands (e.g., snowberry (*Symphoricarpos occidentalis*) thickets). The extent of these habitats has shrunk, expanded, or disappeared in sync with modes of climate, frequency of fire events, tillage, and the effects of grazing mammals i.e., bison, mice, or rabbits.

The Duck Factory produced more than ducks. As James Harriott (1972) pointed out in his book, “All Creatures Great and Small”, the Duck Factory’s landscapes produced a large variety of wildlife of which the American bison herds were the keystone species whose grazing and trampling shaped the grassland flora which in turn influenced the fauna. This variety of wildlife in the Duck Factory supplied the indigenous peoples with food, fiber, and tools. Diaries and notebooks of early explorers, military, and religious personnel describe the effects of drought years and wet years on wildlife in the Duck Factory. This information, plus the evidence found in archaeological excavations, provides further evidence that early native indigenous populations utilized waterfowl as part of their diets and for other cultural purposes such as fishhooks, and personal adornments. Culturally speaking, native peoples held no personal ownership to the land even though large landscape areas were associated with specific tribes during certain times of the year or sequences of years.

The ecology of the Duck Factory seemed in a state of balance with occasional disturbances from large prairie fires and extended weather events such as multiple-year droughts and extended periods of extreme cold and blizzards. However, beginning circa the mid-1800s, the influx of thousands of European immigrant settlers began what was to become a long-term irreversible modification of the natural productivity of native wildlife within the Duck Factory (Higgins et al. 2018). Many of the earliest settler operations were large sheep and/or cattle ranches, most of which were on sites with natural flowing springs, streams, or large lakes. Haying and tillage were done using draft horses or oxen. The advent of steam-powered tractors enabled farmers to convert larger tracts of prairie land into tillage fields. Following the construction and extension of railroad spur-lines and the development of petroleum-powered farm tractors, rural settlement and early alteration of the Duck Factory peaked circa the early 1920s.

According to plat books, the majority of the first-generation family farms were small, ranging from about 40 acres to a few tracts of 320 acres or more. The average family size was much larger than today. One and two-room country schools were numerous, with one occurring in nearly every township or two. Roads and trails were either dirt or gravel. Farm crops were grown without commercial weed or fertilizer products, and part or most of the yields, especially corn and oats, were
used to feed their own draft and other farm animals (e.g., dairy cows, chickens, and hogs).

From the onset of settlement, rural life in the Duck Factory region was extremely harsh, largely due to the drought that occurred during the late 1920’s through most of the 1930’s. The lack of infrastructures, such as improved (paved) roads for transportation, rural electricity, and general communication (telephone), plus a period of large-scale economic depression contributed to a major exodus of citizens from rural America. This was followed by the onset of World War II and the Korean conflicts which further reduced the availability of able-bodied men to work on farms. Fortunately for rural peoples, wildlife and the prairie environment, the drought subsided at the end of the 1930’s, and water conditions and human populations were temporarily stabilized again in the Duck Factory during the 1940’s. Water conditions and human populations continued to be fairly stable until the late 1950’s. These stable conditions resulted in duck numbers peaking in the mid-1950s. However, a drought period in the late 1950’s and early 1960’s reduced duck populations again. From the mid-1960’s through most of the 1970’s water conditions had improved, and duck production was good. Waterfowl research increased with the establishment of the Northern Prairie Wildlife Research Center in North Dakota, the continuous efforts provided by provincial and state agencies, the Delta Waterfowl Research Station staff in Manitoba, and student research studies associated with several universities.

Human population in the Duck Factory has been heavily influenced by migration out of rural areas. Migration trends involving older rural citizens retiring from farming operations and moving from small towns to larger towns that offered more amenities for leisure, health, travel, and entertainment began shortly after the onset of settlement and continues yet today. Likewise, younger rural citizens moved from farms and rural communities in search of greater economic and educational opportunities. By the mid-1980s, the cultural effects of outmigration of young-to-middle aged adults began its toll on key social components in rural communities, such as evidenced by school, church and post office closures and consolidations, and the abandonment of small grain elevators and railroad connections. Another factor influencing human populations was the replacement of farm labor through the advent of new chemical and fertilizer products, the availability of computer technology and social media, plus the onset of hydraulic-powered cylinders that enabled singular control of mega-sized tractors and equipment of all kinds and sizes. As a result, fewer farmworkers, many of which involved families with kids, were no longer needed on most agricultural tillage-operations smaller than about 2000 acres.

By the late 1990’s, many vacant houses in small towns and on former farm sites were being bought or leased by non-resident hunters, or by a few individuals willing to invest in guided hunting and/or fishing opportunities throughout the Duck Factory. In many instances, large acreages were leased and posted to facilitate access for non-residents who pay for services for their hunts. Such posted lands also reduced opportunities for local youths, families, and adults who also liked to hunt or fish. As such, many small towns that have essential environmental and recreational attributes nearby have become rural destinations for
non-resident recreationists. Overall, the attraction of non-residents for temporary recreational experiences rarely results in permanent in-migration of new residents to a town or rural area. Nor does it add greatly to the financial stability of rural communities during years of poor wildlife production numbers. In contrast to owning or leasing housing to establish an annual recreational hangout, a few local citizens in many areas have opted to establish permanent lodgings near environmental amenities which also provide accommodations for comfort, socializing, eating, sleeping, travel assistance, and, if necessary, decoys, blinds, clothing, guns and ammo, and the use of dogs for hunting and retrieving.

During the first two decades of the new millennium, three primary themes keep reappearing in various sport magazines: 1) more youth and females need to be recruited into the sport of duck hunting; 2) the latest information on the newest models of hunting equipment; and 3) locations where others have had excellent hunts. The changing human population in the Duck Factory impacts theme 1: as pointed out earlier, there are fewer kids living in rural America. Most youth in America live in larger towns and cities today, many of which are located far from wildland sites in rural America. This distance necessitates considerable resources for travel, lodging, and food in addition to resources for the equipment to appreciate ducks and wildlife in their natural habitat. To appreciate waterfowl and other wildlife, adequate equipment (e.g., clothing, cameras, guns and ammo, and accessories such as boats, binoculars, and decoys) is required (theme 2). Further, key components to appreciate waterfowl and other wildlife are the essential habitat requirements (healthy expanses of wetlands and wildlands) which are increasingly rare on the landscape. Modern technology (electronic GPS units, plat booklets with maps of open-hunting areas, cell phones, and improved off-road vehicles) has all enhanced hunter access to areas in a timelier manner. For example, a scout doing reconnaissance can spot game 50 miles from the other hunters in the group, who in turn can be hunting there in short order, which increases the duck harvest.

Purchasing, trading, and selling of land has varied greatly through time (ca 160 years) in the Duck Factory. However, inheritance processes and owner attrition during the past 50 years or so has changed farmland ownership and operator status in ways that greatly differ from before. For example, results from recent surveys have revealed that 46% of the cropland in the U.S. is now owned by non-operating land owners, many of which do not live where their land is located (e.g., out of county, state or country) equating to operations on the land that are being done mostly by tenant operators who may or may not readily adopt conservation practices. Survey results also revealed that non-operating landowners tend to be older than the average age of other farmers who own and operate their own land, and a majority of these non-operating landowners are females (a substantial change from the male-dominated ownership in the past). Also, about half of these land ownerships are shared with other family members, most of whom do not have any interaction with the tenant farm operators, leaving the tenant farm operators to make or suggest most of the decisions in types of crops or farming practices, many of which favor financial concerns more often than conservation or environmental concerns relating to land health (Higgins et al. 2018).
Changes in the types of crops grown, types of clean farming practices, and types of harvesting methods and equipment have changed greatly through the past 50 years, most of which have affected waterfowl use and/or production (Higgings et al. 2002; Wright and Wimberly 2013). For example, prior to the 1970’s a major portion of the crops grown in the Duck Factory area were small grains (e.g., wheat, barley, rye, and oats) with lesser amounts of corn, soybeans, and flax. Sunflowers became a major row crop type in the 1970’s. Small grain crops were usually swathed in windrows to cure before combining was performed. Crop depredation by ducks, blackbirds, etc. was a significant economic concern to farmers, especially during extended periods of rain and high humidity. Personnel from conservation agencies provided assistance and/or scaring devices to farmers, sometimes on a daily basis, in attempts to reduce wildlife depredation activities. Requests for assistance with depredation have dramatically decreased during the past two or three decades. In part, this change has occurred due to changes in dominant crop types (e.g., corn and soybeans), wetlands removal or dewatering via extensive plastic tiling and ditching practices, plus faster, larger, and more efficient harvesting equipment and straight combining practices, and in some respects, due to lower numbers of ducks and blackbirds being produced annually. And, perhaps the availability of more modern grain drying and large grain storage facilities, many of which are located on-site by farmers or at nearby elevators, has resulted in significantly fewer depredation complaints through time.

We may be coming to the realization that farming throughout much of the Duck Factory has become more of a “landscape level” mega-farm entity than a “site specific level”-zone of smaller family farm sites. Many factors including mega-sized machinery, genetically modified crop varieties, large supplies of chemicals to improve crop growth with little or no competition from weeds reduce wildlife habitat. In the past, when farm production exceeded demands, product prices crashed, and conservation programs such as the “Soil Bank”, the “Cropland Adjustment Program” (CAP), and the “Cropland Retirement Program (CRP) were established to stabilize or increase farm crop commodity prices. These programs provided a band-aid supply of habitat for wildlife that utilized the grassland habitats provided. The chances of getting mega-farm entities to buy into similar programs would seem to have low probability in the near future, perhaps even in the distant future. Should this be the case, production of natural resources from lands owned, leased, or protected by easements as provided by state and federal agencies and NGO’s will become even more valuable to wildlife and water resources, and to participating hunters, anglers, birdwatchers, honey producers, etc.

As said in Bob Dylan’s 1964 song—“Times they are a changing”—those words fit the theme of the changes that have, and still are occurring in the agricultural landscapes within the Duck Factory areas of the U.S. and Canada. Besides changes in crop types, equipment size and efficiency, wetland drainage and dewatering, there are also major changes in land ownership (more absentee farm owners, more tenant farmers, more larger farm operations), plus fewer youth are being raised on farms as evidenced by school and church closures and business consolidations or eliminations. Today, a higher percentage of row crop acres are
being planted, in part to facilitate bio-fuels production, much of which is used to
fuel combustion engines, and a higher use of chemicals and fertilizers resulting in
cleaner field environments, but more negative water quality issues. As a collective
result, many of the landscapes in the Duck Factory are less productive for ducks
and other wildlife then they were in former decades. This is compounded further
in relation to the trend for many landowners to move away from the actual farm
site, thereby dissolving one’s decisions based on “sense of place attachments”
and “individual connectivity to the actual land use and conservation practices
occurring on the land” (Higgins et al. 2018). In turn, many decisions related to
farm ownership and management are predominately associated with “financial
indebtedness and/or short-term profits”.

In the “long and short” of sustaining or increasing the population status of
many wildlife species associated with the Duck Factory regions of the U.S. and
Canada; land management professionals and university educators and researchers
need to recognize the need to better understand the current trends relating to the
historical, social, cultural, and environmental happenings occurring at landscape
scales throughout the Duck Factory.

LITERATURE CITED


land use practices in the northern Great Plains, USA: an uncertain future for

changing agricultural practices, rural populations, and landowner gender on
South Dakota waterfowl habitats and populations. Proceedings of the South
Dakota Academy of Science 97:15-22.

Parris, D.C., and K.F. Higgins. 2010. Waterfowl in the prehistory of South

Wright, C.K. and M.C. Wimberly. 2013. Recent land use change in the Western
Corn Belt threatens grasslands and wetlands. Proceedings of the National
Academy of Sciences of the United States of America 110:4134-4139.
So what did Zwally and his colleagues do, what did they find, and why does it contradict a plethora of previous studies that suggest Antarctica has been losing mass over the same time period? Figure 1. Comparison of various estimates of Antarctic mass balance trends. Vertical dimension of boxes gives the published uncertainty; horizontal gives the time period covered. It is a firmly established fact that a mere 250,000 native Americans were still alive in the territory of the United States at the end of the 19th century. Still in scholarly contention, however, is the number of Indians alive at the time of first contact with Europeans. Some students of the subject speak of an inflated "numbers game"; others charge that the size of the aboriginal population has been deliberately minimized in order to make the decline seem less severe than it was. The disparity in estimates is enormous. In 1928, the ethnologist James Mooney proposed a total count of 1 The History Learning Site, 22 May 2015. 25 Apr 2020. America in the 1920â€™s. The powerful economic might of America from 1920 to October 1929 is frequently overlooked or simply shadowed by the more exciting topics such as Prohibition and the gangsters, the Jazz Age with its crazies and the Klu Klux Klan. However, the strength of America was generated and driven by its vast economic power. In this decade, America became the wealthiest country in the world with no obvious rival. Yet by 1930 she had hit a depression that was to have world-wide consequences. But in the good times almost everybody s