

# Texas Land Trends



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## Status Update and Trends of Texas Working Lands

1997 - 2017





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## Links and References

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Texas A&M Natural Resources Institute  
*Landowner Survey*

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## About the 2019 Texas Land Trends report

For two decades, the *Texas Land Trends* report has informed private and public landowners and decision-makers about the status and trends of our state’s farms, ranches, and forests, collectively known as *working lands*. Since its inception, the *Status Update and Trends* report has guided conservation efforts and natural resource policy development, and has evolved from a paper-based report to an interactive website and database allowing users to query data and better understand changes to Texas rural landscapes.

Every five years, through the Texas A&M Natural Resources Institute’s (NRI) *Texas Land Trends* program, we examine new patterns and identify trends following the release of the Census of Agriculture datasets by the U.S. Department of Agriculture (USDA) National Agricultural Statistics Service’s (NASS). These comprehensive datasets provide key information for complex Texas natural resource challenges through the power of a “good map.” This *Texas Land Trends Status Update and Trends* report is the fifth iteration of *Texas Land Trends*, and specifically describes the status and recent changes in land values, ownership size and land use of privately-owned Texas working lands. Primary data sources include the Texas Comptroller of Public Accounts land value and land use data from independent school districts (ISDs), and the USDA’s Census of Agriculture’s supplied ownership size information. Population data were derived from the U.S. Census Bureau.



# About the Data

The USDA NASS Census of Agriculture ownership data reports working lands as the number of farms and acres of farms by size class each census year (1997, 2002, 2007, 2012, and 2017) for every county in Texas. The Ag Census defines farms/ranches as any property from which \$1,000 or more of agricultural products were produced, sold, or normally would have been sold, during the census year, and is ultimately a voluntary census aiming to provide valuable information on land use and ownership, operator characteristics, production practices, income, and expenditures of American farms and ranches. NASS conducts capture-recapture methodology to account for undercoverage, nonresponse, and misclassification.

The Texas Comptroller of Public Accounts (Texas Property Tax Assistance Division) produces an annual compilation of land use and land value data from all ISDs. This dataset represents all private lands designated as 1-D and 1-D-1 appraisal status for all Texas ISDs.

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A 1-D agricultural use (Assessments of Lands Designated for Agricultural Use) status refers to lands devoted to full time agricultural operations where the owner's primary occupation and source of income is derived from agricultural enterprises.

In contrast, a 1-D-1 open space status (Taxation of Certain Open Space Land) designates lands based solely on the primary use of the land with no consideration for the landowner's income or occupation. In this report, we aim to quantify changes in working lands (private lands under 1-D and 1-D-1 appraisal status) over time.

Due to its voluntary nature and statistical adjustments thereafter, the Ag Census dataset does not exactly align with land use data reported by the Texas Comptroller. Total acres of farms reported by the Ag Census (126M acres) are historically lower than total reported acres of working lands by the Comptroller (141M acres). These discrepancies are evident in Table 2 and working lands figures reported in this text.

*Texas Land Trends* uses the Ag Census to further define and illustrate ownership patterns and landowner demographics across the state (Ownership Size section), and uses the total acreages reported by the Comptroller to define working lands and land uses in Texas (Working Lands section).

## Status Update and Trends

### State Landowner Survey

Landowners are employing multiple strategies to manage their working lands.

57% managed their land for grazing, of whom 24% also participated in 1-D-1 wildlife valuation.

79% of respondents followed a systems approach when managing their land, considering the needs of livestock, range, and wildlife in their management process; 33% of this group also participated in 1-D-1 wildlife valuation.

34% of all respondents participated in 1-D-1 wildlife valuation on their working lands.

# Report Highlights

## Population Growth



Texas contains 7 of the top 15 most rapidly growing cities in the nation.

From 1997 to 2017, the Texas population increased 48% from 19M to 29M residents at nearly 470,000 new residents annually, or 1,287 people per day.

The majority of the population increase (86%) occurred within the state's top 25 highest growth counties.

## Land Values



The largest increases in land values were observed, as with previous reports, in proximity to major metropolitan areas.

The average appraised market value of Texas working lands was \$1,951/acre in 2017, a 24% increase since 2012 (\$1,569/acre) and a 291% increase over the 20-year period (\$499/acre in 1997).

## Ownership Size



Texas gained approximately 1,000 new working farms and ranches per year from 1997 to 2017, totaling greater than 248,000 ownerships in all.

Average ownership size declined from 581 acres in 1997 to 509 acres in 2017.

Small farms and ranches (tracts < 100 acres in size) represent 58% of all ownerships, but only account for 4% of the land mass for all working lands.

## Working Lands



From 1997 to 2017, Texas lost approximately 2.2M acres of working lands (i.e., converted to non-agricultural uses) with a decline of nearly 1.2M acres converted in the last 5-year period.

Accounting for the majority of working lands in the state, grazing lands have been steadily decreasing since 1997, losing and/or converting roughly 4.6M acres to other land uses for the 20-year period.

Wildlife management acres have significantly increased in recent years, now totaling approximately 5.4M acres from about 94,000 in 1997.

## Introduction

Texas working lands, or privately-owned farms, ranches, and forests, are under increasing land conversion pressure driven by rapid population growth, suburbanization, and rural development, creating implications for rural economies. Here, we summarize land and demographic data related to Texas' changing working lands in four primary sections: population growth, land value, ownership size, and working lands. Findings from the 2019 report are compared to previous *Texas Land Trends* reports to assess current and historic land use trends.

## Land Conversion Process

The process of working land conversion and loss is driven by economic and population growth, and the subsequent increased demand for rural lands converted to other uses.



# Population Growth



Texas leads the nation in privately-owned working lands, which account for 141M acres, or 82% of the state’s entire land area. These important lands provide substantial economic, environmental, and recreational resources that benefit both residents and visitors alike. According to a 2017 U.S. Census Bureau study, Texas also leads the nation in population growth with 7 of the 15 fastest growing cities in the U.S. (U.S. Census Bureau 2017). Over the last 20-year period (from 1997 to 2017), Texas grew from 19M to 29M residents, an increase of 48% or about 470,000 new residents annually. From the *Texas Land Trends* data, the majority of the population increase (86% or 8M new residents) occurred within the state’s top 25 highest total population growth counties (Table 1, Figure 1). These counties account for only 10% of the total land area of the state, yet 74% of all Texans reside within these 25 counties.

By the year 2050, Texas is projected to support upwards of 40M total residents (Texas Demographic Center data, 2019). As Texas continues to expand in population over the next 30 years, increased demand for rural lands, particularly within or surrounding urban centers, will have significant influence on rising land values, changing ownership sizes, and ultimately the continued loss of working lands at a disproportionate rate compared to more rural counties. If high population growth areas continue to expand outwardly, parts once considered rural working lands will face similar challenges currently facing urban-rural transition areas.

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*The 25 Texas counties with the highest total population growth are comprised of 74% of Texas residents but only make up 10% of Texas land area.*

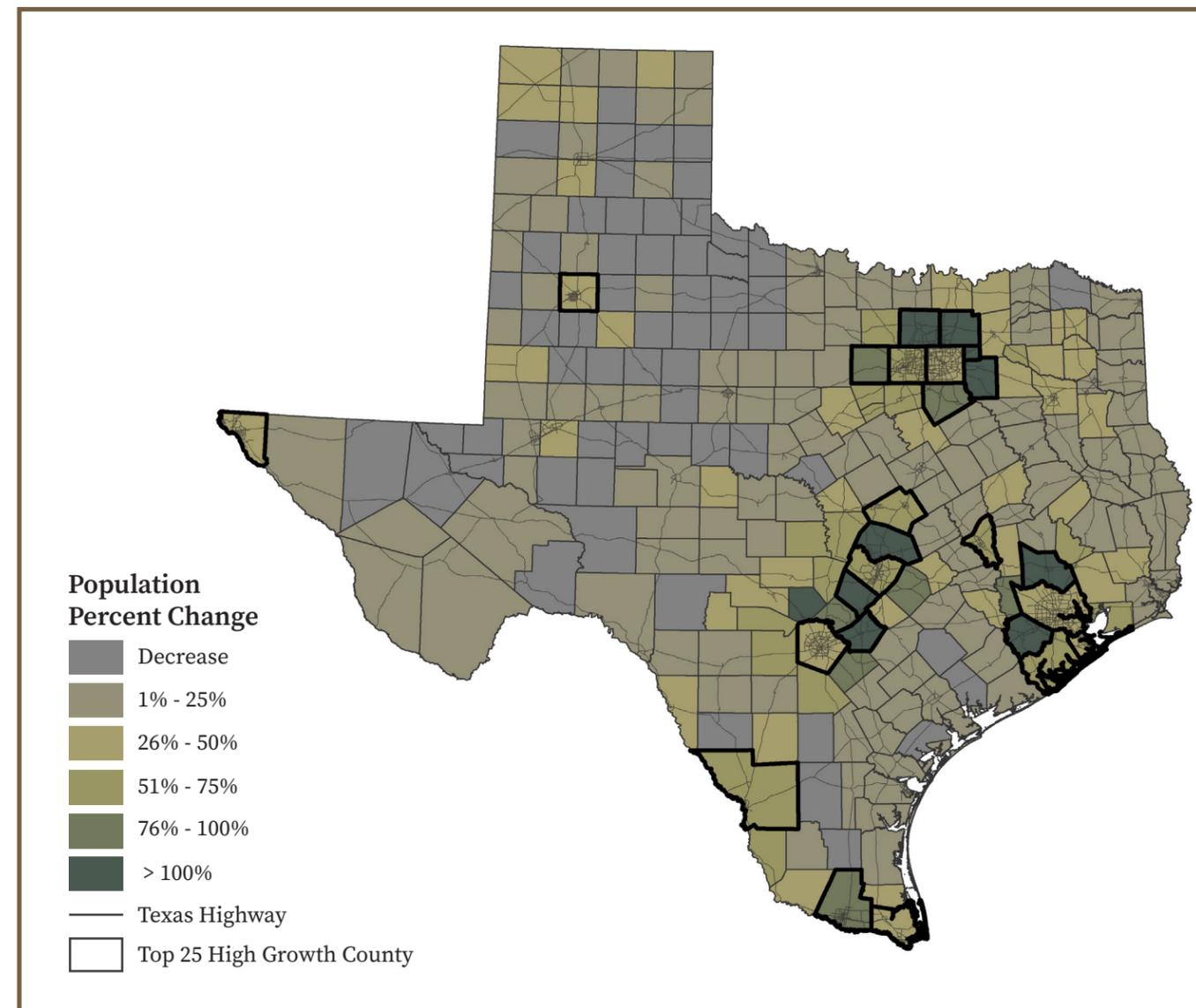


Figure 1. Statewide change (%) in total population by county from 1997-2017. Top 25 highest total population growth counties highlighted.

Table 1. Texas statewide and top 25 highest growth counties population from 1997 to 2017.

Year	Statewide Population	Top 25 Highest Growth Counties Population	% of Total Population in Top 25 Counties
1997	19,439,337	13,283,103	68%
2002	21,779,893	15,297,994	70%
2007	23,904,380	17,184,214	72%
2012	26,403,743	19,273,178	73%
2017	28,797,290	21,315,204	74%
1997-2017	9,357,953	8,032,101	86%

# Land Values

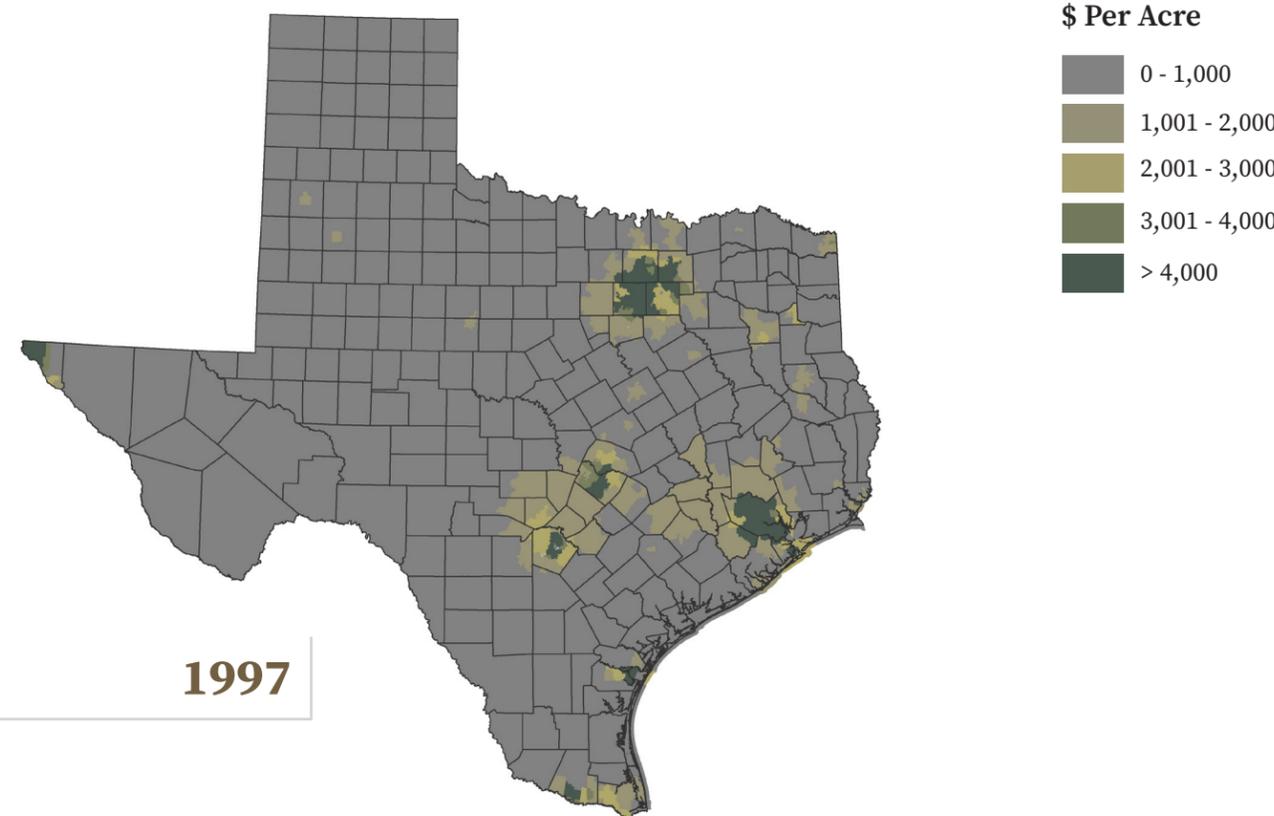


Historically, land market values served as a strong indicator of rural land demand. Like more traditional home real estate values, rural land market values vary by location, land use, property size, and other factors. From the *Texas Land Trends* data, the average appraised market value for Texas working lands was \$1,951/acre in 2017 (Figure 2). On average, this represents a 24% increase in land value since 2012 (\$1,569/acre), and a 291% increase over the 20-year period (\$499/acre in 1997).

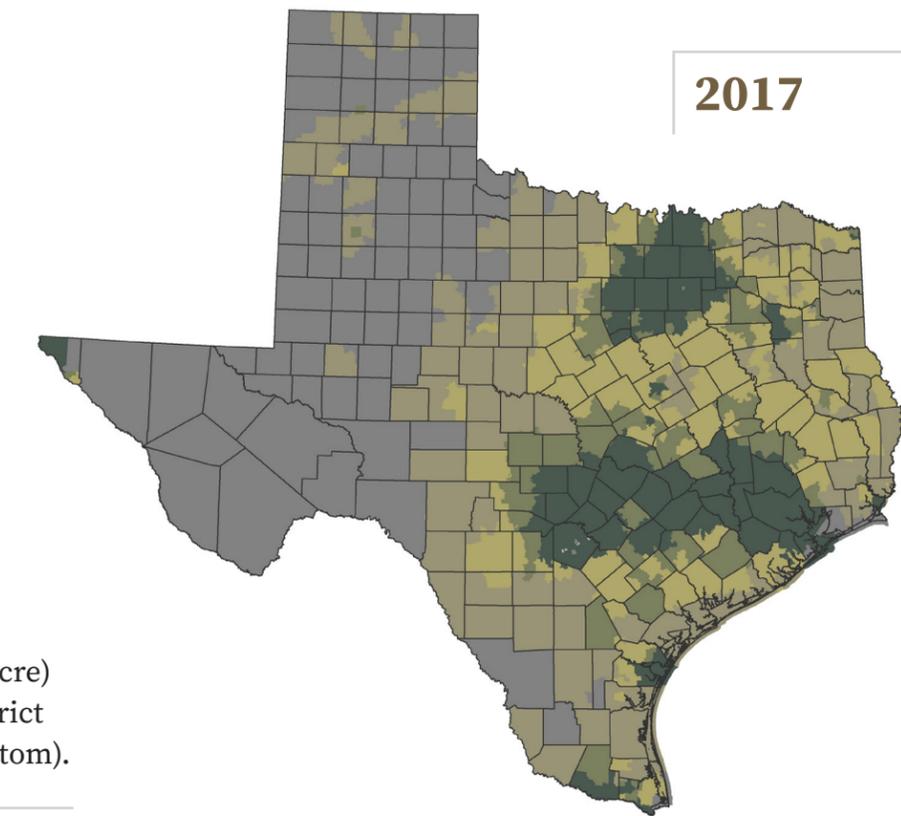
As in previous *Texas Land Trends* analyses, changes in market value were closely tied to distance from major metropolitan growth areas. The average land value, for example, within the top 25 highest total population growth counties was \$6,312/acre in 2017, compared to the remaining 229 county average of \$1,649/acre. During this same period the productivity value of the land (i.e., the value of the land based solely on the ability to produce commodities such as food and fiber) has remained largely unchanged. The average statewide productivity value in 1997 was \$83/acre, compared to \$89/acre in 2017. Relatively static agricultural production values and rapidly rising market values are likely underlying drivers of ownership fragmentation and land use conversion, most notably in the areas within and surrounding the state's urban and suburban centers.

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1997



2017

Figure 2. Market value (\$/acre) by independent school district for 1997 (top) and 2017 (bottom).

# Ownership Size



By the end of 2017, the USDA NASS Census of Agriculture accounted for more than 248,000 farm and ranch operations in the state, an increase of approximately 1,000 new farms and ranches added annually since the 1997 census. Average ownership size decreased from 581 acres in 1997 to 509 acres in 2017. In comparison, average ownership size in the top 25 highest growth counties decreased from 275 acres in 1997 to 205 acres in 2017, and the remaining 229 counties decreased from 646 acres in 1997 to 579 acres in 2017.

Small ownerships (i.e., tracts < 100 acres in size) represent 58% of total operations (more than 145,000 individual operations in 2017), but only account for 4% of all working land acres (Table 2). From 1997 to 2017, small ownerships increased by almost 39,000 new farms and ranches, a 37% increase over the 20-year time period (Figure 3).

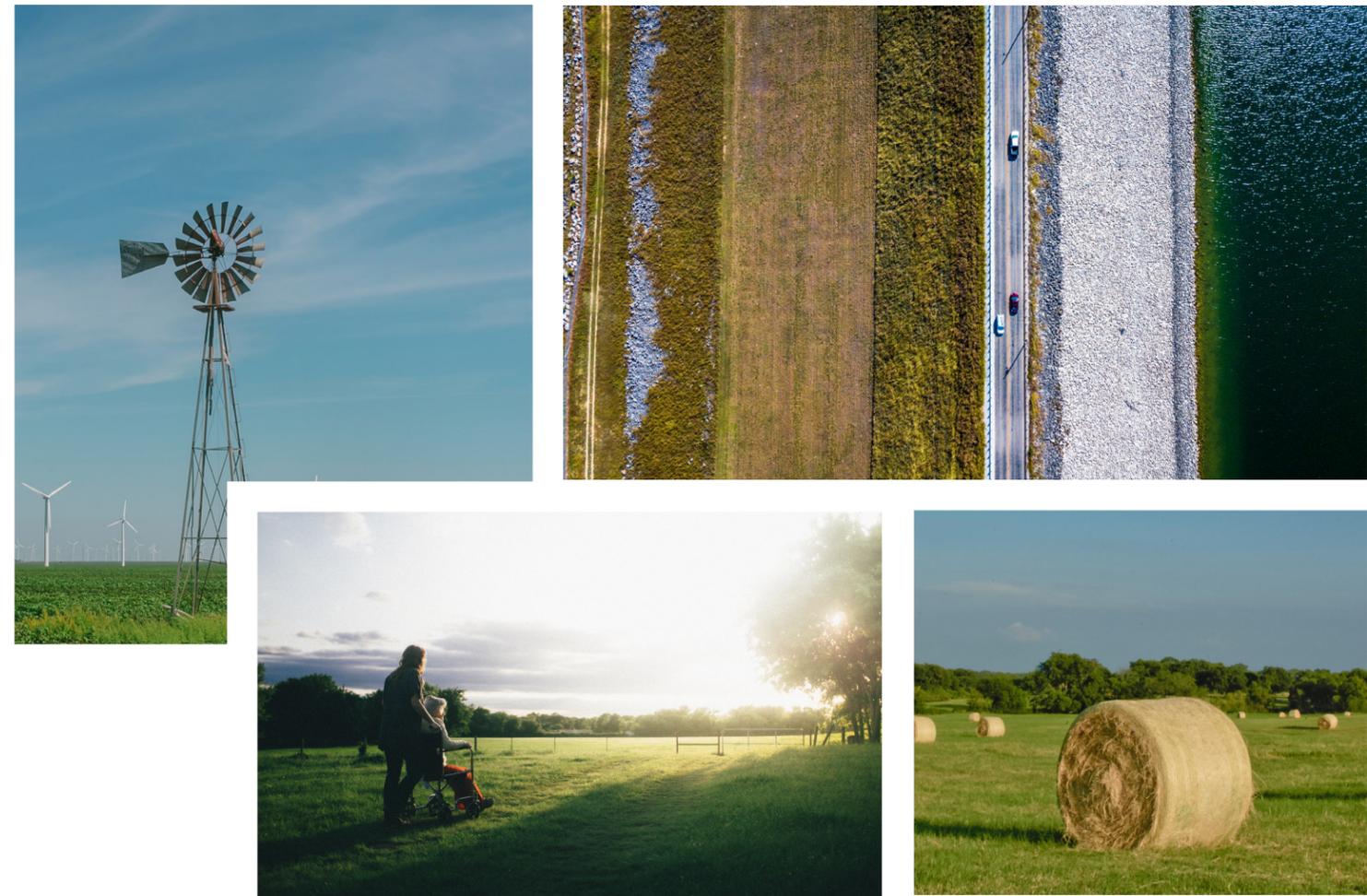
Mid-sized working lands (i.e., tracts 500 to 2,000 acres in size) accounted for more than 23M acres of land statewide or approximately 19% of the total working land base (Table 2). This ownership size class experienced the greatest decline in ownership acres and total operations from the *Texas Land Trends* data from 1997 to 2017. More than 7,400 mid-sized operations, representing roughly 7.2M acres, shifted to smaller or larger ownership size classes between 1997 and 2017 or were converted to other non-agricultural uses (Figures 4-6). The amount of land for mid-sized farms and ranches declined at the rate of about 360,000 acres annually.

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Consolidation of farms and ranches were observed with a net increase of more than 3.2M acres and approximately 440 individual large ownerships (i.e., tracts > 2,000 acres; Figure 7). Operations in this size class comprised more than 83M acres of land statewide, or approximately 66% of the total working land base, with 11,037 individual operations in 2017 (Table 2).

For both small and mid-sized ownership classes, ownership fragmentation continues to be closely related to proximity to major urban areas and/or transportation corridors (Figure 8). As urban centers grow in human population, the demand for surrounding rural land increases, raising land market values and subsequently increasing landowners' incentive to subdivide or sell their working lands for suburban/urban use. In contrast, consolidation of working lands may be driven by the ability of prospective buyers to capitalize on both land values and land availability, appearing to occur in certain regions of the state (e.g., High Plains and Rolling Plains Ecological Regions).

*Texas Land Trends* data (1997 to 2017) found an association between the profitability of a farm or ranch operation and ownership size. Small ownerships reported increasing net losses on farm and ranch proceeds in 2017 (Figure 9). Thus, the shift in ownership size category or loss of larger ownerships through fragmentation may have potential implications for profitability and continued support of working lands. Likewise, consolidation into larger operations may be associated with more profitable agricultural operations or regional market opportunities (e.g., generally lower land values).



**Table 2. Total acres and number of land ownerships in 1997 and 2017 by ownership size class in Texas.**

Size Class	Acres of Operations		% of Total Operations		Number of Operations		% of Total Operations	
	1997	2017	1997	2017	1997	2017	1997	2017
1-100 ac	4,003,617	4,624,286	3%	4%	106,389	145,323	47%	58%
100-500 ac	17,777,363	14,881,187	13%	12%	79,299	67,569	35%	27%
500-2,000 ac	30,605,313	23,449,317	23%	19%	31,888	24,487	14%	10%
2,000+ ac	80,201,156	83,442,794	60%	66%	10,597	11,037	5%	4%
Total	132,587,449	126,397,584	100%	100%	228,173	248,416	100%	100%

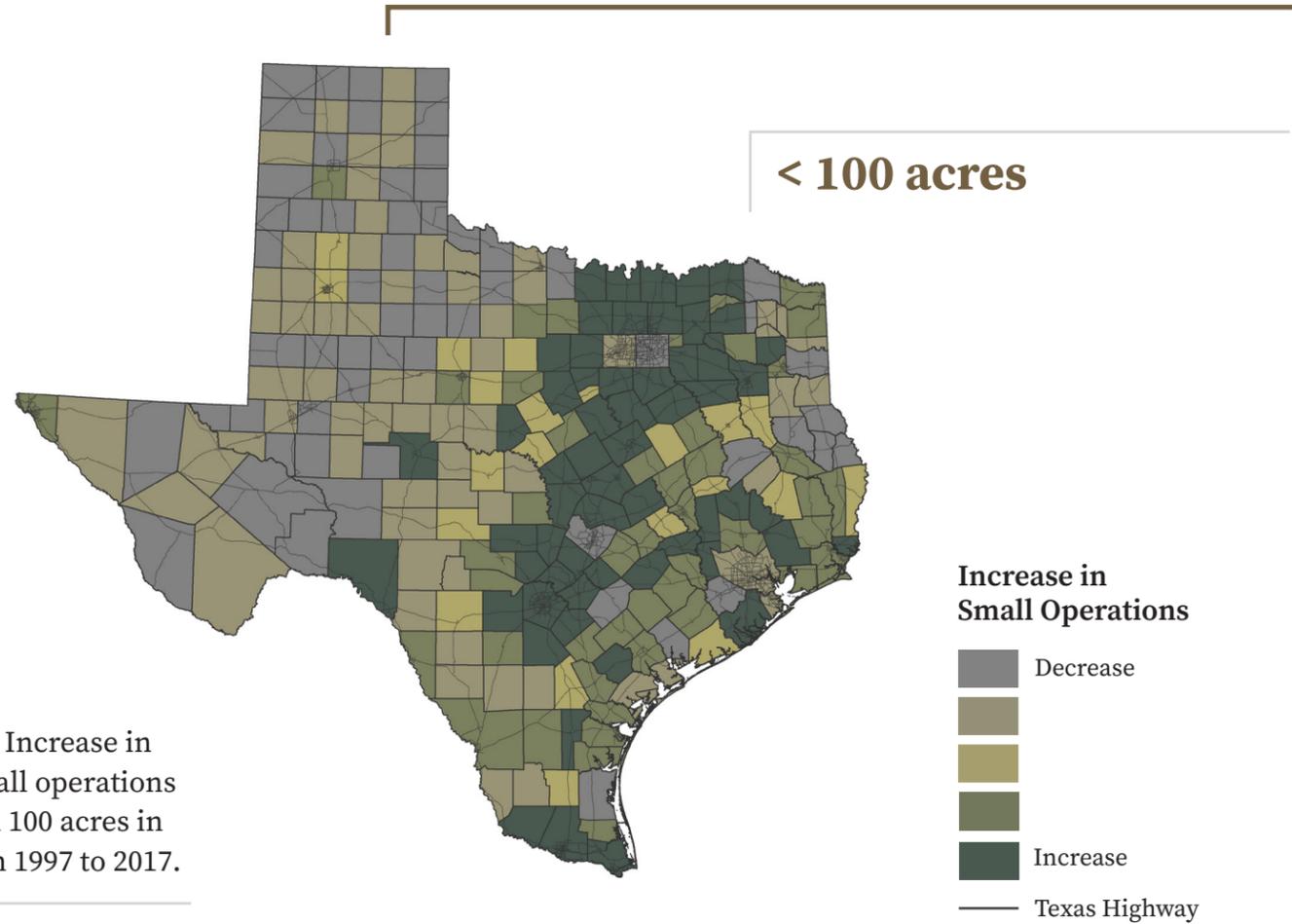


Figure 3. Increase in Texas small operations (less than 100 acres in size) from 1997 to 2017.

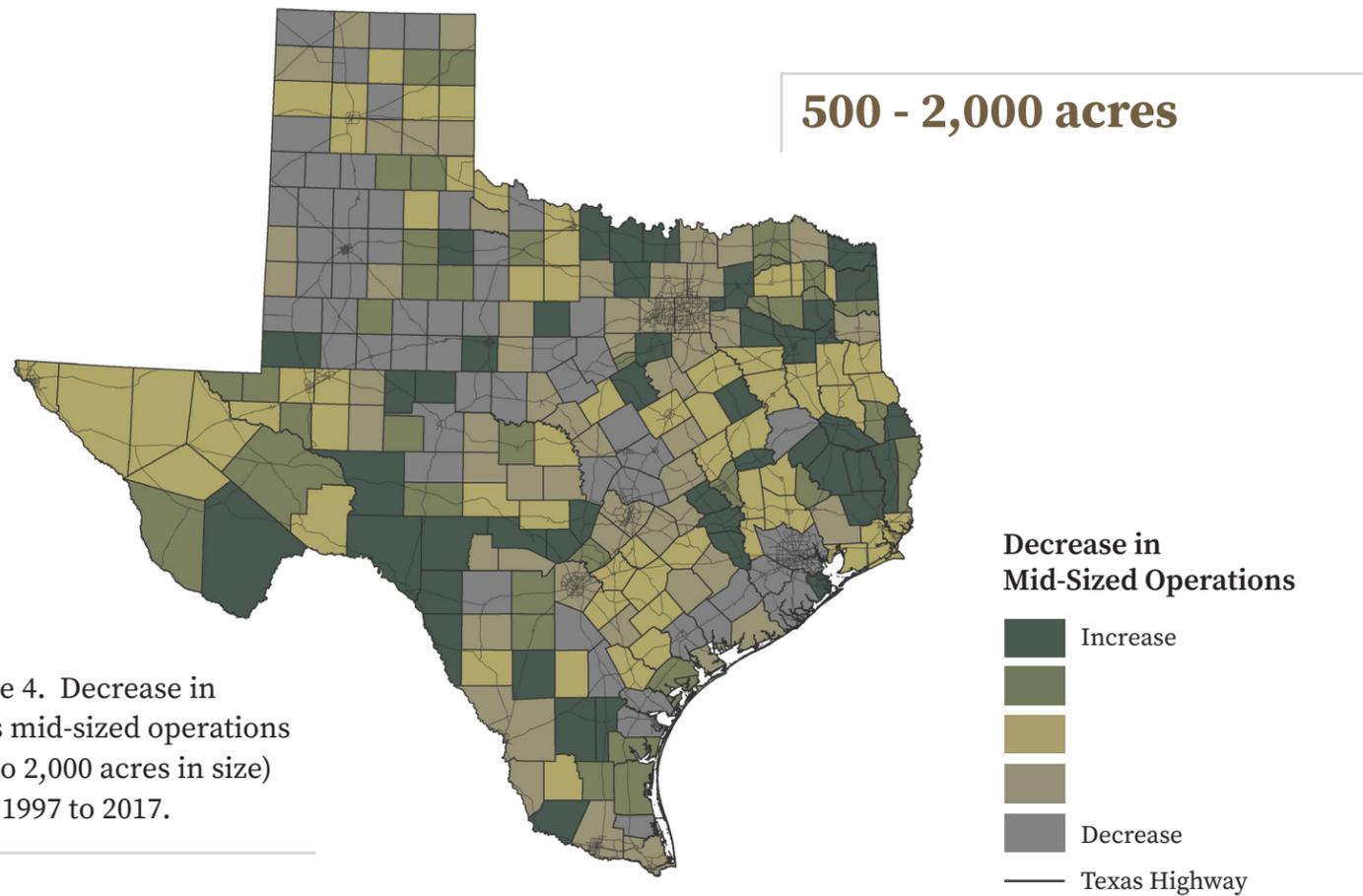


Figure 4. Decrease in Texas mid-sized operations (500 to 2,000 acres in size) from 1997 to 2017.

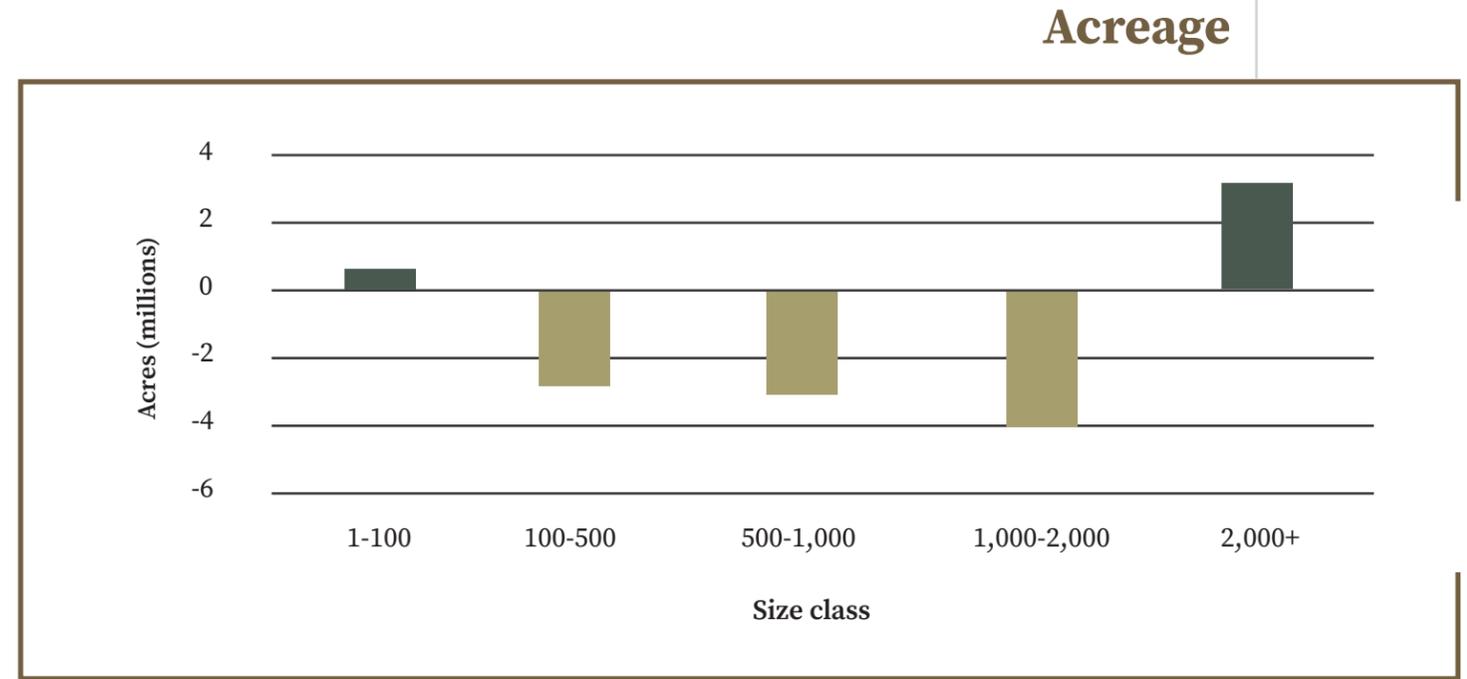


Figure 5. Change in acreage of Texas operations by ownership size class from 1997 to 2017.

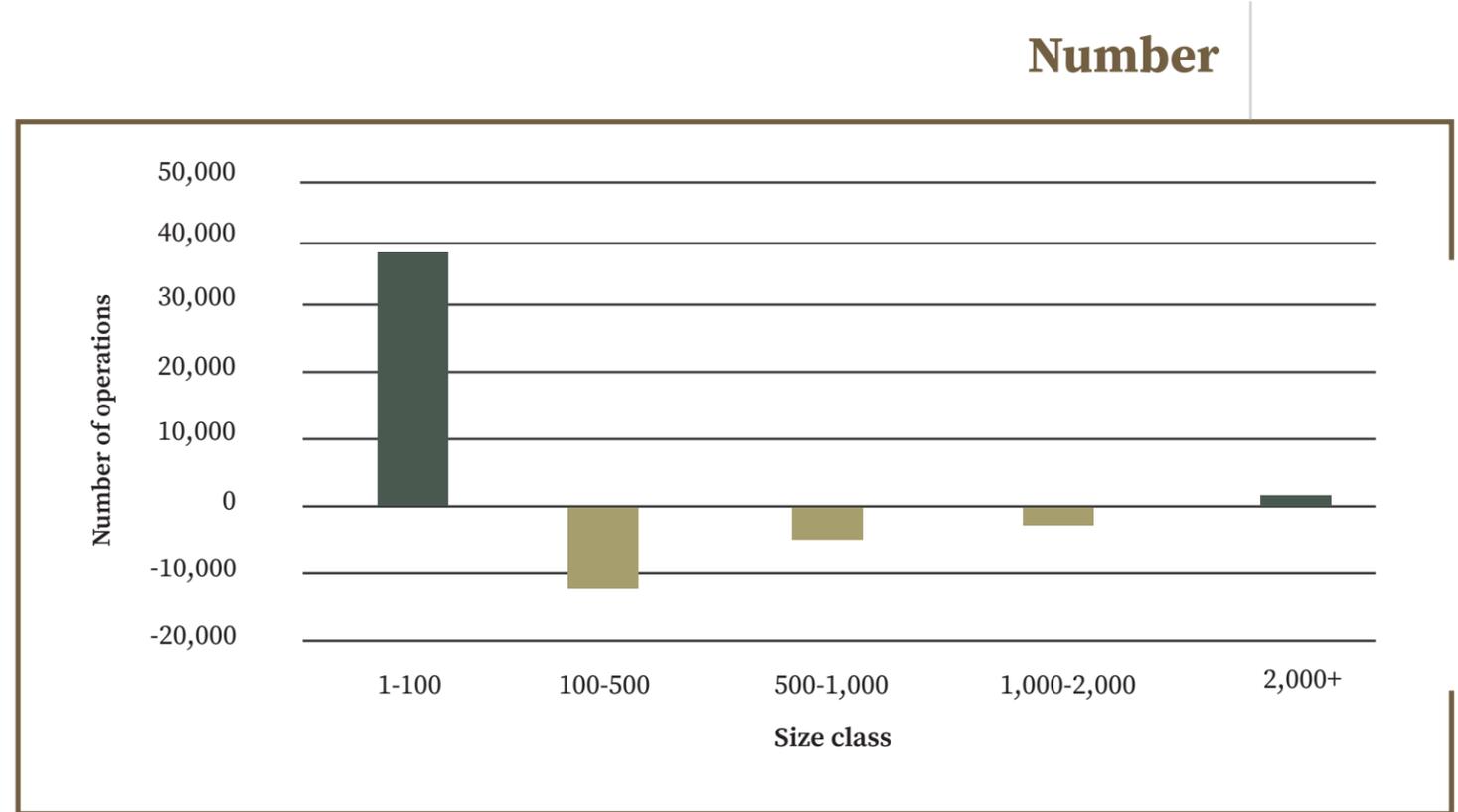


Figure 6. Change in number of Texas operations by ownership size class from 1997 to 2017.



## > 2,000 Acres

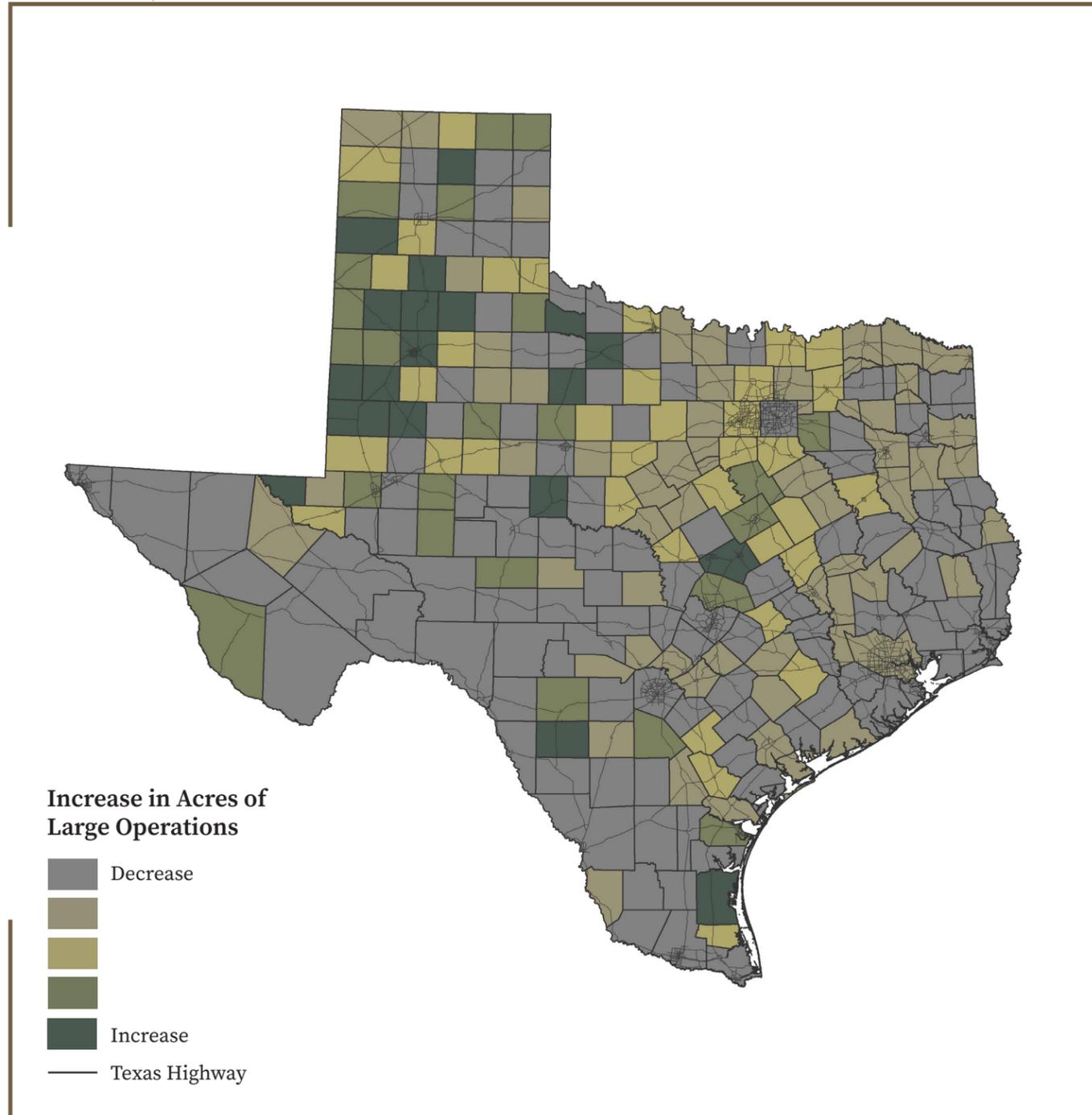


Figure 7. Increase in acres of Texas large operations (greater than 2,000 acres in size) from 1997 to 2017.

## Fragmentation Risk

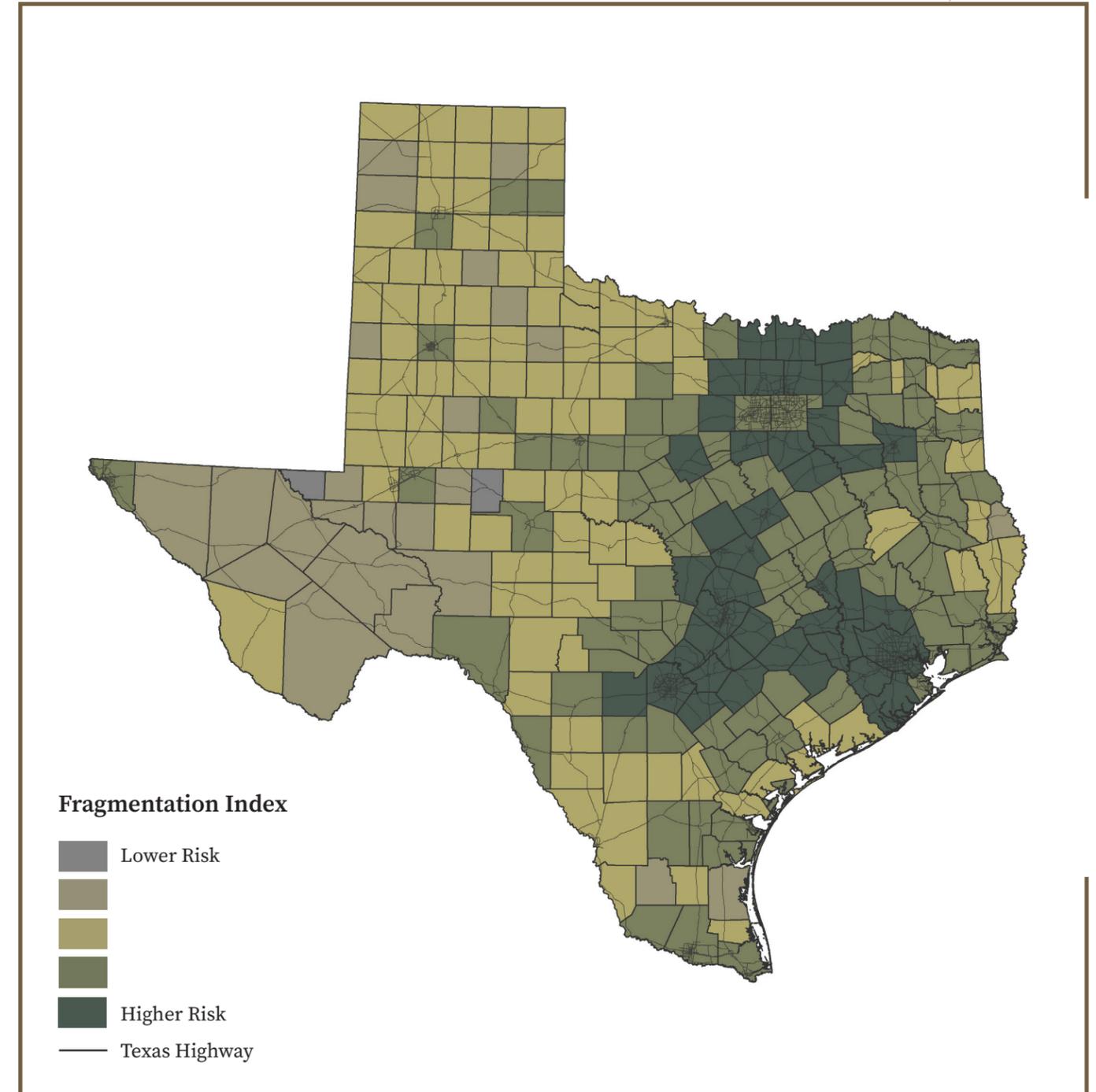


Figure 8. Texas fragmentation risk index created using market value percent change (1997 to 2017), operator age greater than 65 (2017), average operation size (2017) and future population growth (2020 to 2070).



## Annual Net Income

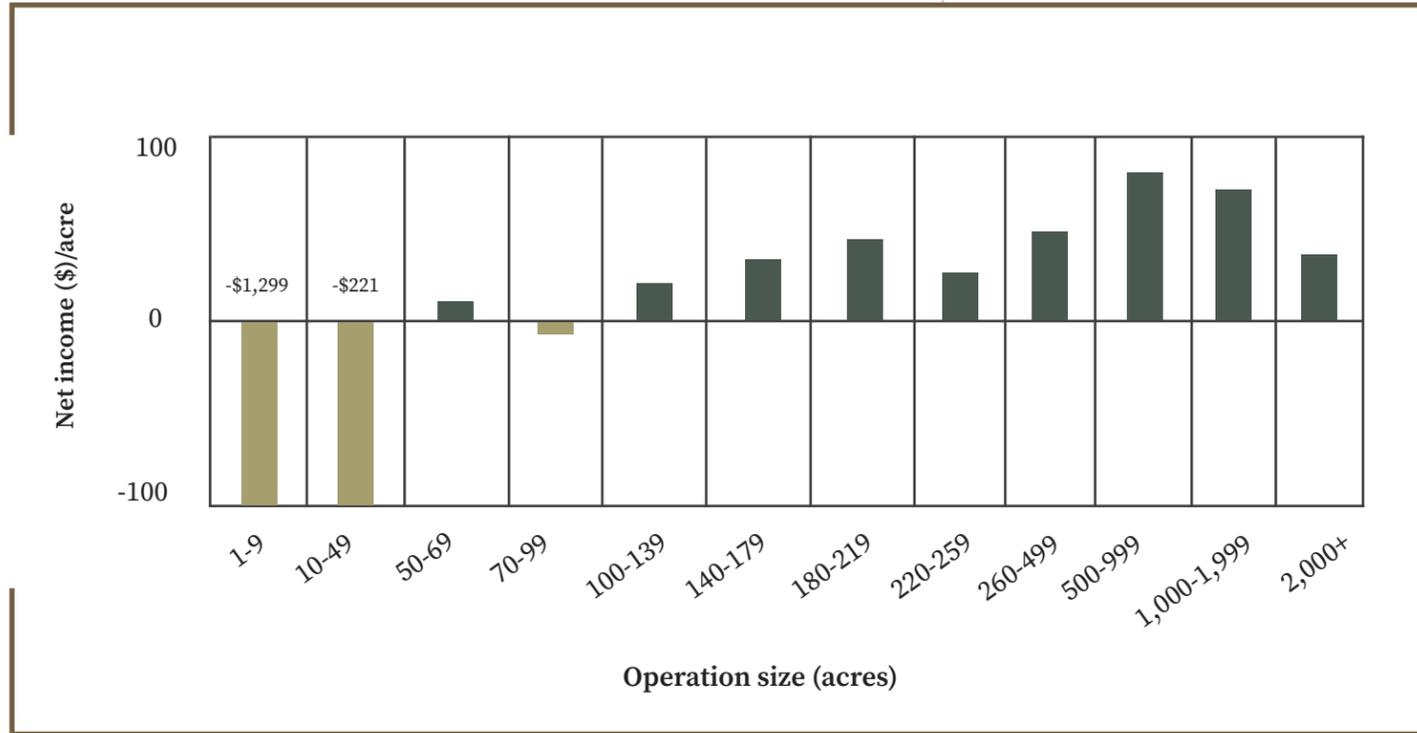


Figure 9. Annual net income per acre by Texas operation size class in 2017.



# Working Lands



We observed conversion of working lands as the change in total acres from year to year, as lands previously under 1-D or 1-D-1 status move to other non-agricultural uses. From 1997 to 2017, Texas lost approximately 2.2M acres of designated working lands, converted to non-agricultural uses, with a substantial conversion of nearly 1.2M acres in the last 5-year period (Figure 10). The annual land conversion rate within the top 25 highest growth counties over the 20-year period was about 60K acres per year (56% of total loss), compared to the remaining 229 county annual average of more than 46K acres per year (43% of total loss). On a county basis, this loss translates to an average of about 2,400 acres per county per year in the top 25 highest growth counties, compared to about 200 acres per county per year in the remaining 229 counties.

Within the working lands data set, we also observed changes in specific working land uses, including cropland, grazing land, timber, wildlife management, and other. Grazing lands, accounting for the majority of working lands in the state, have steadily decreased since 1997, losing roughly 4.6M acres to other land uses (both agricultural and non-agricultural) (Figure 11). Cropland experienced similar declines over the same time period, with a loss of more than 3M acres to other land uses (Figure 11).

Beginning in 1995, wildlife management was included as a qualifying agricultural practice to obtain open space appraisal

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status in Texas. This alternative form of agriculture helps keep family farms, ranches, and forestlands intact, and has gained in popularity over the years, now totaling approximately 5.4M acres (Figures 12 and 13). Many may attribute the large losses of grazing land and cropland to shifts to wildlife management, however, it is important to note that in some cases, wildlife management acres includes grazing practices as a management option.

For example, according to a statewide landowner survey conducted by NRI in collaboration with the Texas Parks and Wildlife Department (Fall 2016), landowners are employing multiple strategies to manage their working lands. Of those who responded to the survey, 57% managed their land for grazing, of whom 24% also participated in 1-D-1 wildlife valuation. In addition, 79% of respondents followed a systems approach when managing their land, meaning they considered the needs of livestock, range, and wildlife in their management process; 33% of this group also participated in 1-D-1 wildlife valuation. In total, 34% of all respondents participated in 1-D-1 wildlife valuation on their working lands. As the use of wildlife management increases across the state as a viable land management strategy, the current trend suggests working landowners are utilizing various tools to maintain sustainable operations.

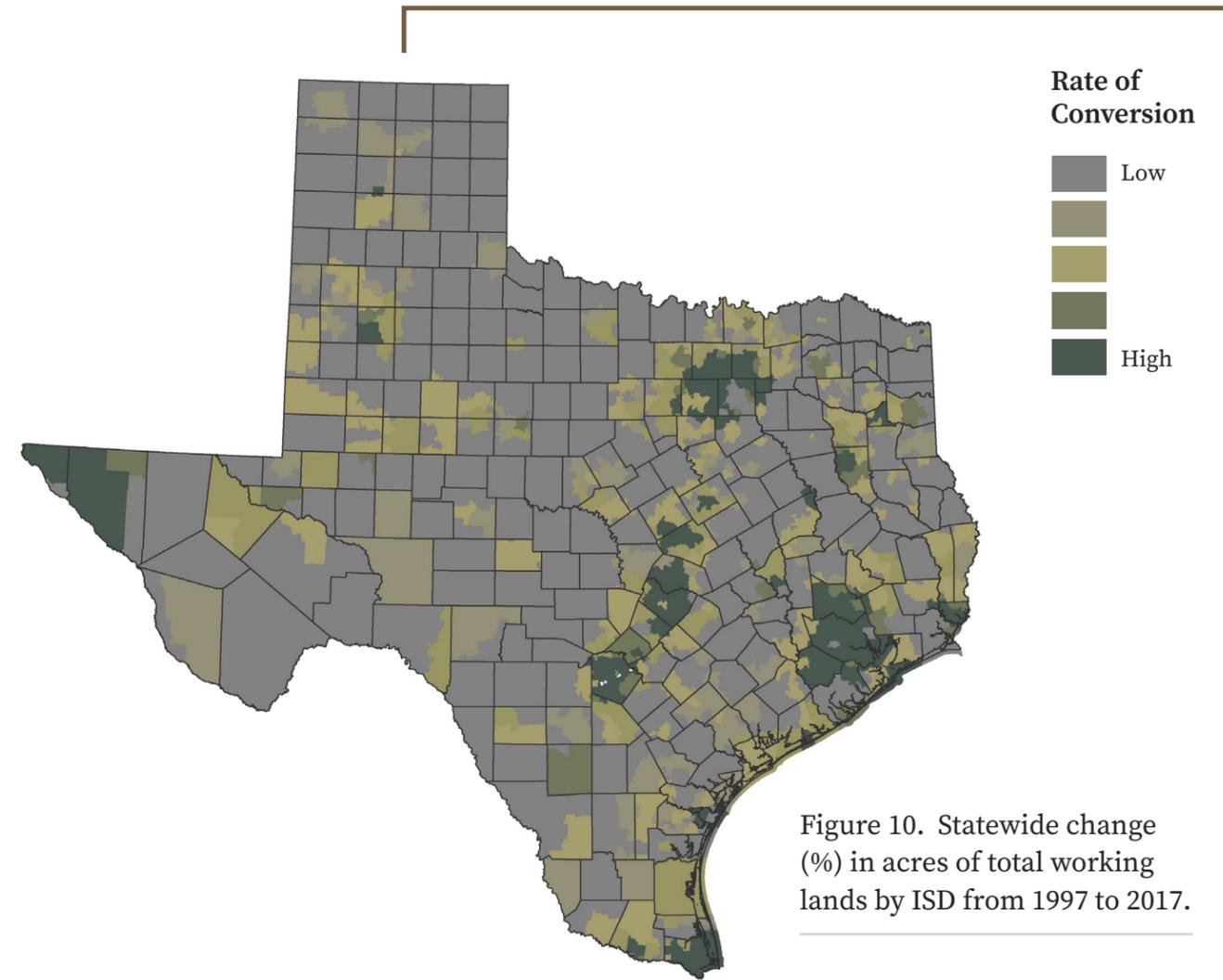


Figure 10. Statewide change (%) in acres of total working lands by ISD from 1997 to 2017.

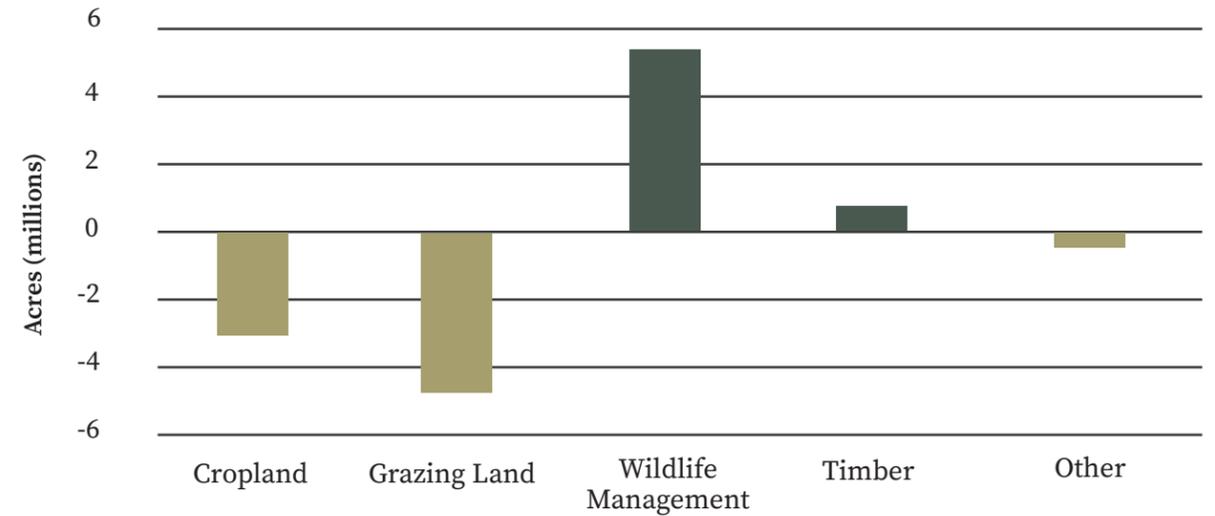


Figure 11. Texas land use change in acres used for cropland, grazing land, wildlife management, timber, and other from 1997 to 2017.

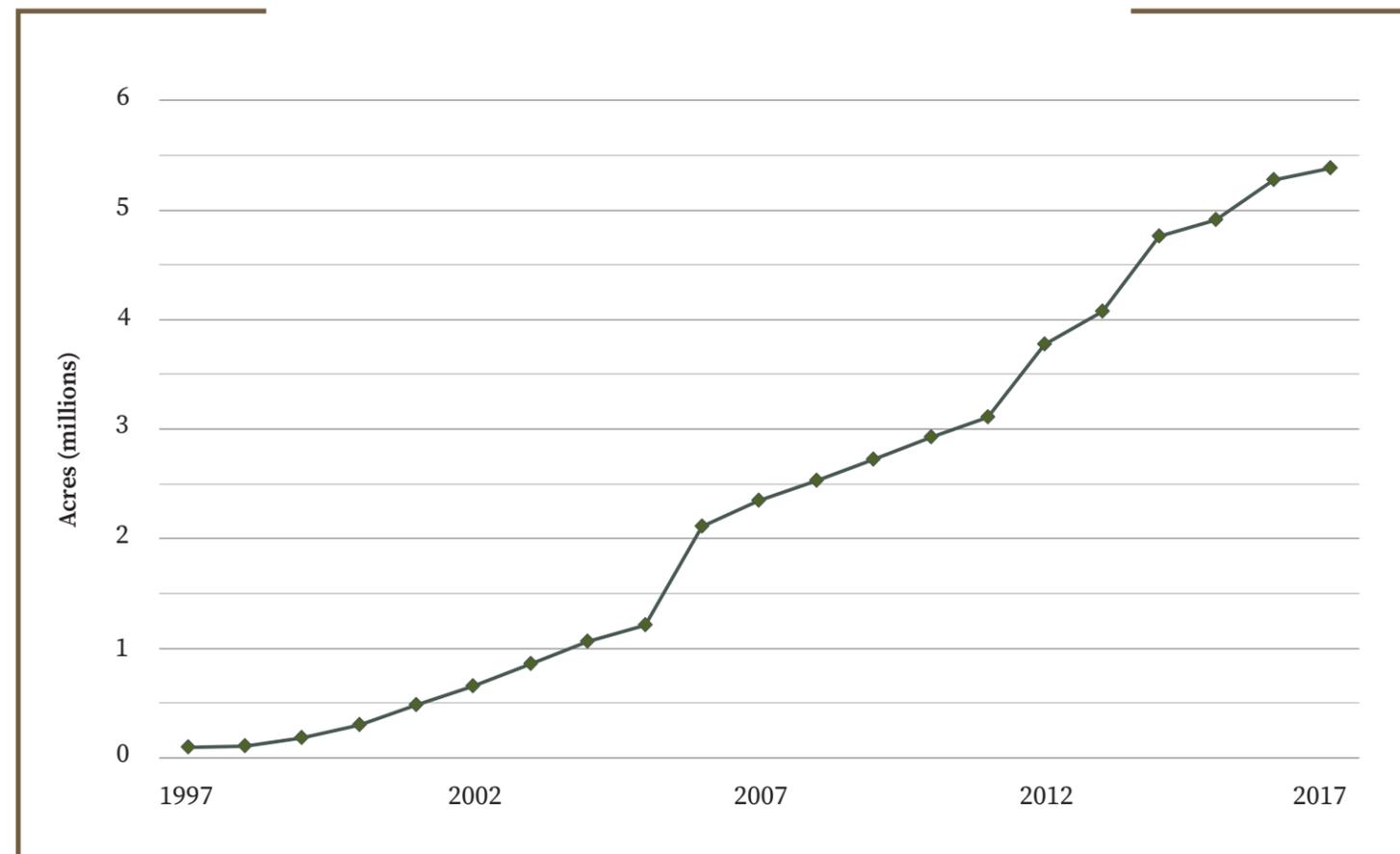
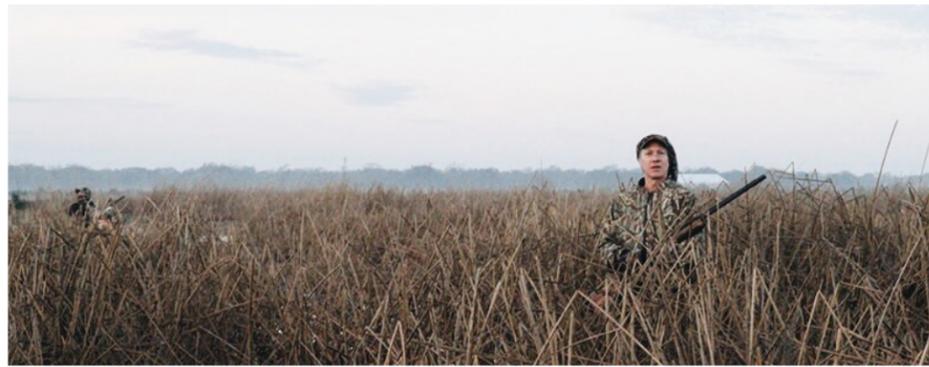
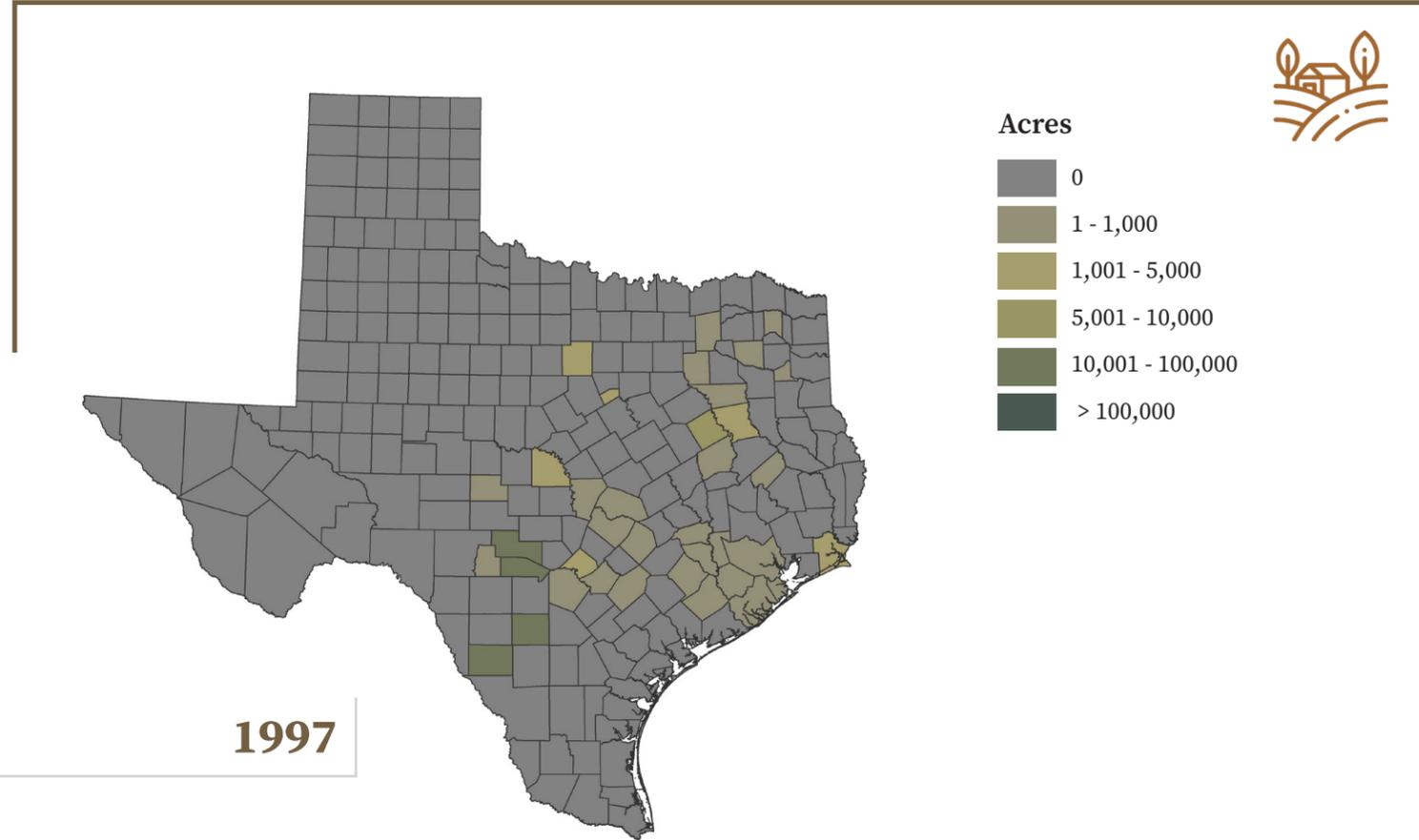
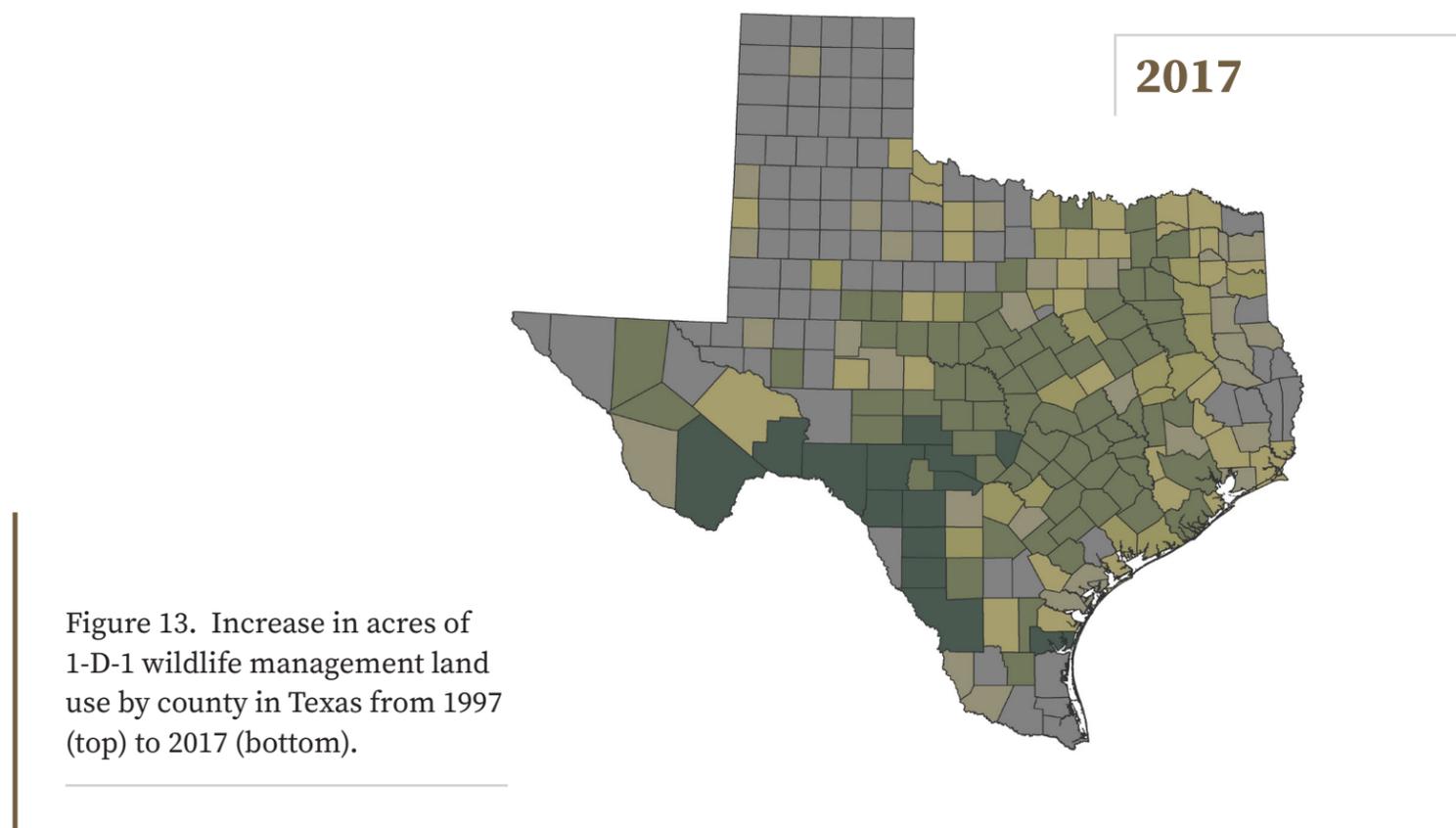


Figure 12. Annual increase in 1-D-1 wildlife management acres in Texas from 1997-2017.



1997



2017

Figure 13. Increase in acres of 1-D-1 wildlife management land use by county in Texas from 1997 (top) to 2017 (bottom).

The future conservation of working lands is directly linked to private landowners who steward these properties.

## Future Outlook

As Texas continues to grow in population and economy, the demand for rural land, especially in areas surrounding major urban centers and transportation corridors, will continue to increase and have long-term impacts on working lands. These lands across the state are following much of the same trends in ownership fragmentation and conversion in the last 5-year period as observed in previous years since 1997. Population growth increases land values and markets creating incentives for landowners to subdivide and sell their land. As ownership sizes decrease, the likelihood of maintaining a profit with traditional farming, ranching, and forestry uses also decreases, facilitating the conversion of working lands to non-agriculture uses.

Aside from the economic benefits working lands provide from general agricultural production (i.e., crops, timber, livestock, etc.), open spaces in Texas also provide valuable ecosystem services that we rely on for every day necessities, such as air and water quality, carbon sequestration and wildlife habitat. Fragmentation and conversion of working lands disrupts the natural processes of healthy ecosystems, creates increased financial burden to mitigate impacts, and elevates pressures on remaining open spaces to provide these services for growing urban areas. Ultimately, the future conservation of working lands is directly linked to private landowners who strategically steward these properties. Informed conservation and urban planning efforts should include and target these landowners, and explore methods to incentivize the continued stewardship of working lands in Texas.

# Terms and Definitions

## **1-D Appraisal**

Agricultural use status (Assessments of Lands Designated for Agricultural Use) for lands devoted to full time agricultural operations where the owner's primary occupation and source of income is derived from agricultural enterprises.

## **1-D-1 Appraisal**

Open space status (Taxation of Certain Open Space Land) for lands based solely on the primary use of the land with no consideration for the landowner's income or occupation.

## **Ag Census farm**

Any property from which \$1,000 or more of agricultural products were produced, sold, or normally would have been sold, during the census year.

## **Capture-recapture methodology**

An accepted statistical methodology to account for undercoverage, nonresponse, and misclassification in survey based research and studies.

## **Consolidation**

The combining of smaller farms, ranches, and forests to create larger ownerships.

## **Conversion**

The transition of 1-D and 1-D-1 qualified open space status to any other type of property tax classification, generally agricultural use to non-agricultural use (residential, commercial, etc.).

## **Fragmentation**

The break-up of large farms, ranches, and forests into smaller ownership sizes.

## **General agricultural production**

Commodities produced on working lands, including crops, fiber, food, timber, and livestock.

## **Highest population growth counties**

Counties that showed the highest increase in total population (number of people).

## **Large ownerships**

Operations greater than 2,000 acres in size as reported by the USDA NASS Census of Agriculture.

## **Market value**

The average appraised value of land, calculated as \$ per acre, as reported by the Property Tax Assistance Division of the Texas Comptroller.

## **Mid-sized ownerships**

Operations 500 to 2,000 acres in size as reported by the USDA NASS Census of Agriculture.

## **Productivity value**

The average value of the land based solely on the ability to produce commodities such as food and fiber. Calculated as \$ per acre as reported by the Property Tax Assistance Division of the Texas Comptroller.

## **Small ownerships**

Operations less than 100 acres in size as reported by the USDA NASS Census of Agriculture.

## **Working lands**

Privately owned farms, ranches, and forests that produce food and fiber, support rural economies, and provide wildlife habitat, clean air and water, and recreational opportunities.





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