

# **Cone Production Prospects for Longleaf Pine in 2026**

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During the spring of 2026, cone production data were collected from selected low-density (e.g., shelterwood) stands of mature longleaf pine, throughout its native range. Binocular counts of green cones were conducted on the crowns of sampled trees, as viewed from a single location on the ground. Cone visibility on each tree is enhanced when the observer stands with their back to the sun. A breeze that moves the flexible pine needles about also helps the relatively more rigid cones stand out for the observer. The near-term regional average and individual site averages for these counts are reported in Table 1.

Table 1. Estimated Cone Production for Longleaf Pine.

Cooperator	County/Parish	State	Estimated cones per tree for fall 2026 from Green Cones	Cone Crop Category
Kisatchie National Forest	Grant	Louisiana	204.0	Bumper
Blackwater River State Forest	Santa Rosa	Florida	26.4	Fair
Eglin Air Force Base	Okaloosa	Florida	39.8	Fair
Jones Ecological Research Center	Baker	Georgia	39.5	Fair
Tall Timber Research Station	northern Leon	Florida	28.8	Fair
Apalachicola National Forest	southern Leon	Florida	4.8	Failed
Fort Benning Military Base	Chattahoochee	Georgia	47.1	Fair
Sand Hills State Forest	Chesterfield	South Carolina	26.0	Fair
Bladen Lakes State Forest	Bladen	North Carolina	4.4	Failed
Ordway-Swisher Biological Station	Putnam	Florida	19.0	Poor
Tuskegee National Forest	Macon	Alabama	153.2	Bumper
Regional Average			53.9	Good

### Regional Summary:

The regional cone crop, based on green cone counts, is **Good for 2026**, at 53.9 cones per tree. Although mostly fair counts for this year's crop, the natural variation, typically seen across the native range of longleaf pine, is apparent in this year's data, with two sites having a bumper crop, six sites having a fair crop, one site having a poor crop, and two sites having a failed crop. A bumper crop ( $\geq 100$  cones per tree) is present in Grant Parish, Louisiana and Macon County, Alabama. A fair crop (25 to 49 cones per tree) is present in Santa Rosa County, Florida; Okaloosa County, Florida; Baker County, Georgia; northern Leon County Florida; Chattahoochee County, Georgia; and Chesterfield County, South Carolina. A poor crop (10 to 24 cones per tree) is present in Putnam County, Florida. A failed crop ( $<10$  cones per tree) is present in southern Leon County, Florida and Bladen County, North Carolina.

The 61-year regional cone production average for longleaf pine is about 27 green cones per tree. The single best cone crop occurred in 1996 (115 cones per tree). Good cone crops were observed in 1967 (65 cones per tree), 1973 (67 cones per tree), 1987 (65 cones per tree), 1993 (52 cones per tree), 2014 (98 cones per tree), 2017 (62 cones per tree), and 2026 (54 cones per tree). Fair or better cone crops have occurred during 46% of all years since 1966.

### Evaluating Cone Production Data for Longleaf Pine:

Observations, concerning the natural variation in cone crops for longleaf pine, and field studies, determining the volume of seed (i.e., number of productive cones per tree) required to successfully regenerate even-aged shelterwood-density stands, resulted in development of Table 2. The minimum cone crop needed for successful natural regeneration, using an even-aged management technique such as the uniform shelterwood method, is 750 green cones per acre. This assumes 30 cones per tree, with 25 seed-bearing trees per acre. Thus, cone crops classified as “fair or better” represent regeneration opportunities, for which a receptive seedbed may be prepared through application of prescribed fire during the months prior to seed fall in October.

Table 2. Classification of Cone Crops for Longleaf Pine\*.

Crop Quality	Cones per Tree	Cones per Acre (on 25 trees per acre)
Bumper crop	≥ 100	≥ 2500
Good crop	50 to 99	1250 to 2475
Fair crop	25 to 49	625 to 1225
Poor crop	10 to 24	250 to 600
Failed crop	< 10	< 250

\* Cones on mature trees (14-16 inches at dbh) in low-density stands (basal area < 40 feet<sup>2</sup>/acre).

When uneven-aged management stand-reproduction methods (e.g., single-tree selection) are used, “seed rain” incident on a site is often sufficient for successful natural regeneration (even though seed fall may be of variable intensity from year to year). While using selection silviculture frees one from dependency on the timing of good cone crops, it may nonetheless be helpful for the manager of multi-aged stands to be aware of cone crop quality from year to year when making management decisions. Cone crop information may also benefit tree-nursery managers, in their annual cone collection planning, as they seek to replenish their seed supply.

It is also worth noting that a good deal of spatial variation occurs among longleaf pine stands across the Southern Region, relative to cone production. Therefore, even during a year with a lower overall regional average number of cones per tree, certain localities can experience substantial cone production in longleaf pine. This regional report is intended as a guide, which broadly forecasts the overall status of cone production for longleaf pine. Thus, we encourage forest managers to take binoculars to the field and carefully examine any individual stands in

which they have an interest. In this way, they can, for those specific stands, acquire more detailed, site-specific information that will aid them in making management decisions.

### **Study Partners:**

Kisatchie National Forest, Pineville, Louisiana  
Blackwater River State Forest, Milton, Florida  
Natural Resources Management, Eglin Air Force Base, Niceville, Florida  
J.W. Jones Ecological Research Center, Newton, Georgia  
Tall Timbers Research Station, Tallahassee, Florida  
National Forests in Florida, Tallahassee, Florida  
Land Management Branch, Fort Benning Military Base, Columbus, Georgia  
Sand Hills State Forest, Patrick, South Carolina  
Bladen Lakes State Forest, Elizabethtown, North Carolina  
Ordway-Swisher Biological Station, Melrose, Florida  
Tuskegee National Forest, Tuskegee, Alabama

### **Data Collection Cooperators:**

Hans Rohr, Bladen Lakes State Forest, Elizabethtown, North Carolina  
Molly Hopkins, Sand Hills State Forest, Patrick, South Carolina  
Grace Howell, Ordway-Swisher Biological Station, University of Florida, Melrose, Florida  
Stephen Hudson, Land Management Branch, Fort Benning Military Base, Columbus, Georgia  
Ryan Campbell, Natural Resources Management, Eglin Air Force Base, Niceville, Florida  
Alan Springer, Southern Research Station, USDA Forest Service, Pineville, Louisiana  
Jacob Floyd, Southern Research Station, USDA Forest Service, Pineville, Louisiana

### **Cone Counting Method:**

The following procedure and field data sheet are provided for those who may wish to conduct field observations of cone production for longleaf pine in their own locale. Remember:

- **Green cones** tell you how much production will happen this year (see Figure 1)
  - **Brown cones** tell you how much production occurred last year.
- Equipment: 8 or 10x binoculars, field data sheet, clipboard, pencil, and diameter-tape.  
➤ Optional Equipment: flagging, bark scraper, paint, tree tags, aluminum nails, hammer.
1. Locate a stand that is growing at a shelterwood density of less than 40 square feet per acre (25 to 35 square feet per acre is a typical range) and contains numerous trees of at least 10 inches at dbh. Better cone crops generally come from larger-diameter trees and poorer cone crops come from smaller-diameter trees. A key consideration is that high brush and/or trees should not visually obscure the crowns of your sample trees, or your data collection will be impaired. The midstory must be relatively open, so you can see the entire crown of each sample tree.



Figure 1. Two **green cones** on a branch of longleaf pine, as they would appear in spring.

2. Select at least 10 trees in the stand to serve as your representative sample for monitoring, by painting a ring around the tree at dbh or higher and a sequence number on each (use a color other than white to avoid confusion with the white rings often painted around trees having RCW nests). You may also attach a metal tag to the tree using an aluminum nail. But attach this high enough so that the tag number will not become obscured by char, or the nail will not melt during prescribed fire (these can happen, when tags are too low).
3. Using the field data sheet, enter the following data at the top: location, date, and crew. Then for each sample tree: measure its DBH in inches (to the nearest 0.1 of an inch) and record that measurement. Now, you are ready to count the green cones.

4. Walk away from the tree and toward the sun. The precise distance away from the tree is not crucial, but it should be far enough away to give your neck a comfortable angle while looking up, but not so far away that you cannot clearly see the cones with 8 or 10 power binoculars. With the sun at your back, you may need to adjust your position a bit to the left or to the right, so that you can view the entire tree crown without moving from your counting location. An uncrowded midstory will be helpful at this point.
5. Count the number of green cones that can be seen from the single spot on which you are standing. We usually start at the lower left of the crown and work up to the top of the crown, then move across the top of the crown to the right, and then down the right side of the crown all the way to the bottom-most branches. This is a systematic approach that scans across the entire crown (left half, top, right half) and leads to consistently accurate counts. Once you have done this, enter the number of green cones into the data sheet.
6. Because these developing cones are green, they can be difficult to see against green pine foliage. It helps to count these green cones on a sunny day when the light is bright. It also helps if there is a light breeze blowing that moves the pine needles about, thereby revealing the more rigid cones. These green cones contain the seed that will be shed during the coming October, and these data will become the numbers upon which the cone crop forecast for the current year will be based (a forecast in which many forest managers and tree-nursery managers have a great interest). News of a fair or better cone crop alerts forest managers to begin preparing their seedbeds so they will be receptive to capturing and deriving the most benefit from the upcoming seed fall. Tree-nursery managers are also alerted to cone collection opportunities. Note on the data sheet that the raw number you see in your green cone count needs to be multiplied by 2 at the end of the column. Many years of research by Bill Boyer indicated that this adjustment to the raw count was needed to obtain an accurate estimate (the actual regression from his work approximated 1.98). In general terms he explained this need, because the cone count is performed by looking at only one side of the tree, thus the raw count for green cones needs to be doubled.

### **Field Data Sheet:**

The field data sheet appearing on the following page can accommodate up to 24 sample trees. Spaces are provided at the bottom for summing the total cones for the count, multiplying the total times 2, and computing the average number of cones per tree. Should you wish to collect data for a greater number of trees, multiple sheets may be used. However, this format can be easily created on a computer by using an electronic spreadsheet program, which can be vertically extended to provide ample room for a great number of sample trees, with summary spaces at the bottom.

## Regional Longleaf Pine Cone Study: Count of Green Cones - - Field Data Sheet

Location: \_\_\_\_\_ Date: \_\_\_\_\_ Crew: \_\_\_\_\_

Tree Number	DBH in inches	Number of Green Cones
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

Total Number of Green Cones =

Total Number of Green Cones x 2 =

Average Number of Green Cones Per Tree =

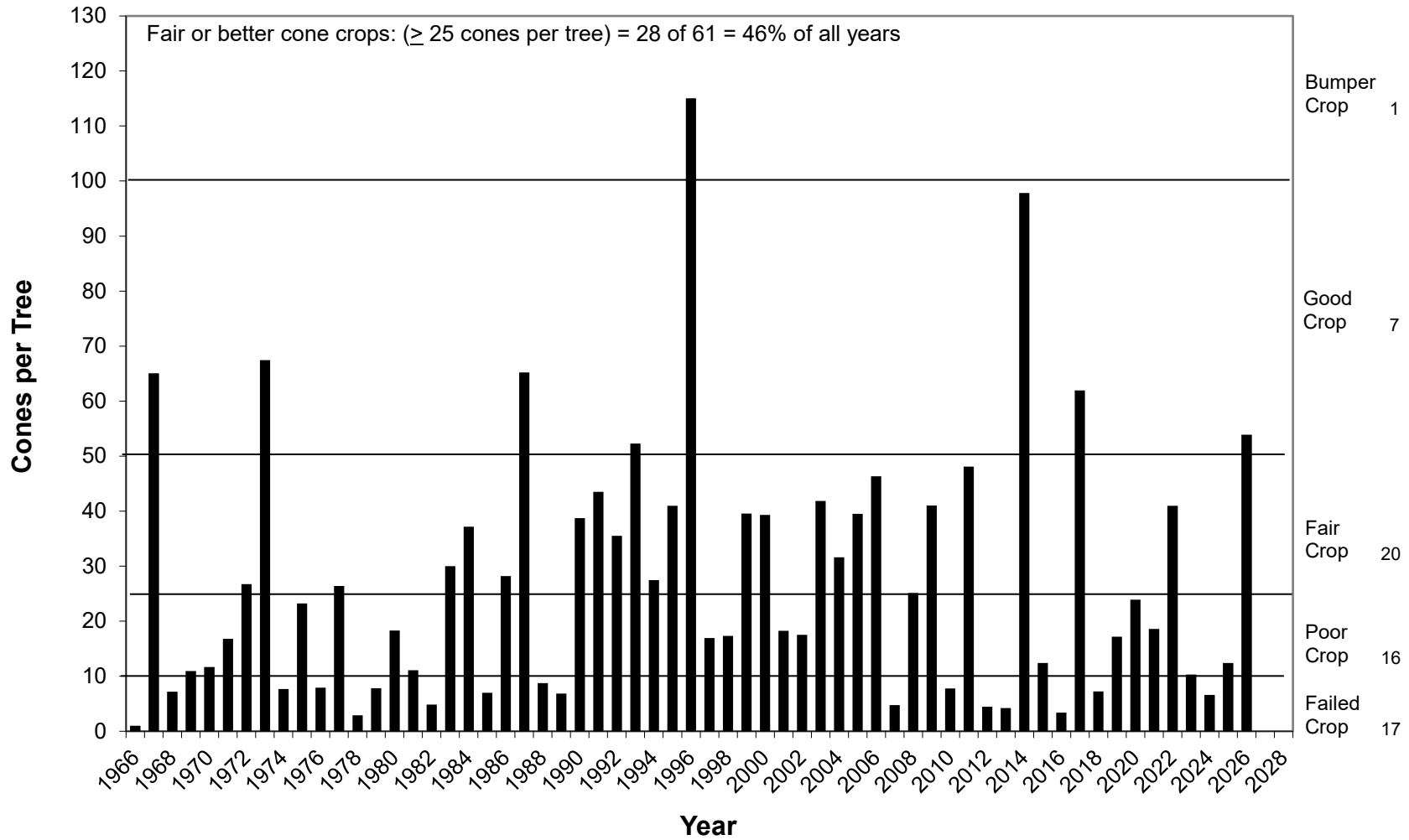
**Regional and Local  
Summary and Graphs**

Year	Southern Region	LA-Kisatchie National Forest	W FL-Blackwater River State Forest	W FL-Eglin Air Force Base	W FL-Apalachicola National Forest	SW GA-Jones Research Center	Red Hills-Tall Timbers Research Station	W GA-Fort Benning Military Base	SC-Sand Hills State Forest	NC-Bladen Lakes State Forest	FL Pen.-Ordway-Swisher Biological Station	AL - Tuskegee National Forest
1966	1.0				0.6							
1967	65.1	26.4	13.8		18.7	2.7						
1968	7.2	5.8	2.5	0.2	9.9	0.4				0.2		
1969	10.1	10.1	2.5	0.6	5.2	0.8			9.2	1.9		
1970	11.7	13.6	1.7	0.9	1.0	7.5			7.1	0.9		
1971	16.8	4.8	29.2	4.1	14.4	1.5			10.2	2.7		
1972	26.7	8.3	0.9	3.5	0.2	0.4			51.0	25.6		
1973	67.4	55.6	14.4	10.6	27.2	7.2			92.0	8.8		
1974	7.7	1.9	3.0	1.6	9.6	0.3			6.7	0.3		
1975	23.2		17.5	10.6		5.0			67.3			
1976	7.9		1.5	1.7	22.9	1.6			16.1			
1977	26.4	47.4	9.9	1.1	89.7	1.1			25.5	16.9		
1978	2.9	5.0	0.8	0.3	2.7	1.0			8.5	0.3		
1979	7.8	10.6	5.5	4.4		3.1			18.4	1.4		
1980	18.3	67.3	0.5	0.6		2.3			36.2			
1981	11.1	13.6	1.2	1.0		0.9			43.5			
1982	4.8	0.7	3.2	8.1		1.7			2.3			
1983	30.0	94.2	11.8	22.9		11.0			25.8			
1984	37.2	133.8	12.3	5.9		1.5			50.6			
1985	7.0	3.8	8.5	6.1		1.2			9.3			
1986	28.2	60.3	19.2	28.3		19.4			10.8			
1987	65.2	89.0	58.7	18.1		11.2			110.2			
1988	8.7	24.8	8.2			1.2			3.1			
1989	6.9	26.6	2.1			0.7			4.8			
1990	39.9	46.3	35.5			50.3			17.8			
1991	43.5	47.0	33.7			1.2			117.5	37.8		
1992	35.5	4.8	8.3		76.6	0.2			152.4	5.3		
1993	52.3	16.2	89.8		5.7	91.2		15.6	71.0	0.7		
1994	27.5	118.1	9.7	20.1	11.1	24.9			3.7	17.6		
1995	41.0	42.7	10.9	10.1	17.9	66.1		10.4	51.0	152.1		
1996	115.0	75.9	206.4	87.8	190.8	123.7		34.9	48.2	110.3		
1997	17.0	11.3	8.2	6.7	38.6	16.9		52.7	7.2	9.7		
1998	17.3	55.6	27.1	11.3	1.2	3.9		16.1	1.1	1.4		
1999	39.5	25.1	13.0	15.6	3.8	112.5	43.7	21.7	52.2	98.3		
2000	39.3	8.5	30.5	15.8	22.0	106.1	58.8	22.4	8.1	61.7		
2001	18.3	60.3	8.8	8.4	9.8	2.3	14.2	17.6	2.9	1.0		
2002	17.5	4.5	3.7	7.9	2.2	6.9	63.3	12.8	40.0	31.7		
2003	41.9	34.3	69.4	31.8	13.8	89.1	42.6	8.4	7.3	18.4		
2004	31.6	67.8	24.9	43.6	37.9	88.9	32.8	2.4	4.5	5.0		
2005	39.5	28.9	23.0	57.1	36.1	117.1	26.8	21.2	37.4	3.5		
2006	46.3	19.0	4.1	16.9	14.0	129.2	56.8		49.9	108.8		
2007	4.7	15.1	0.0	0.8	2.8	5.8	2.0	15.4	0.7	3.9		
2008	25.1	24.3	38.6	30.2	38.4	8.6	30.6	16.2	7.0	0.4		
2009	41.0	58.0	31.6	14.3	6.0	65.1	20.2	81.4	55.3	38.1		
2010	7.8	6.3	4.0	3.7	0.8	1.6	2.6	39.8	5.6	10.0		
2011	48.1	31.3	141.2	65.1	32.8	66.2	7.0	38.1	18.4	7.6		
2012	4.5	5.8	1.0	0.6	1.8	2.4	12.1	2.2	8.1	3.3		
2013	4.2	4.7	2.6	1.8	0.8	0.9	1.3	12.7	3.9	2.3		
2014	97.8	222.8	149.0	74.9	7.0	134.4	13.6	138.5	54.1	24.1		

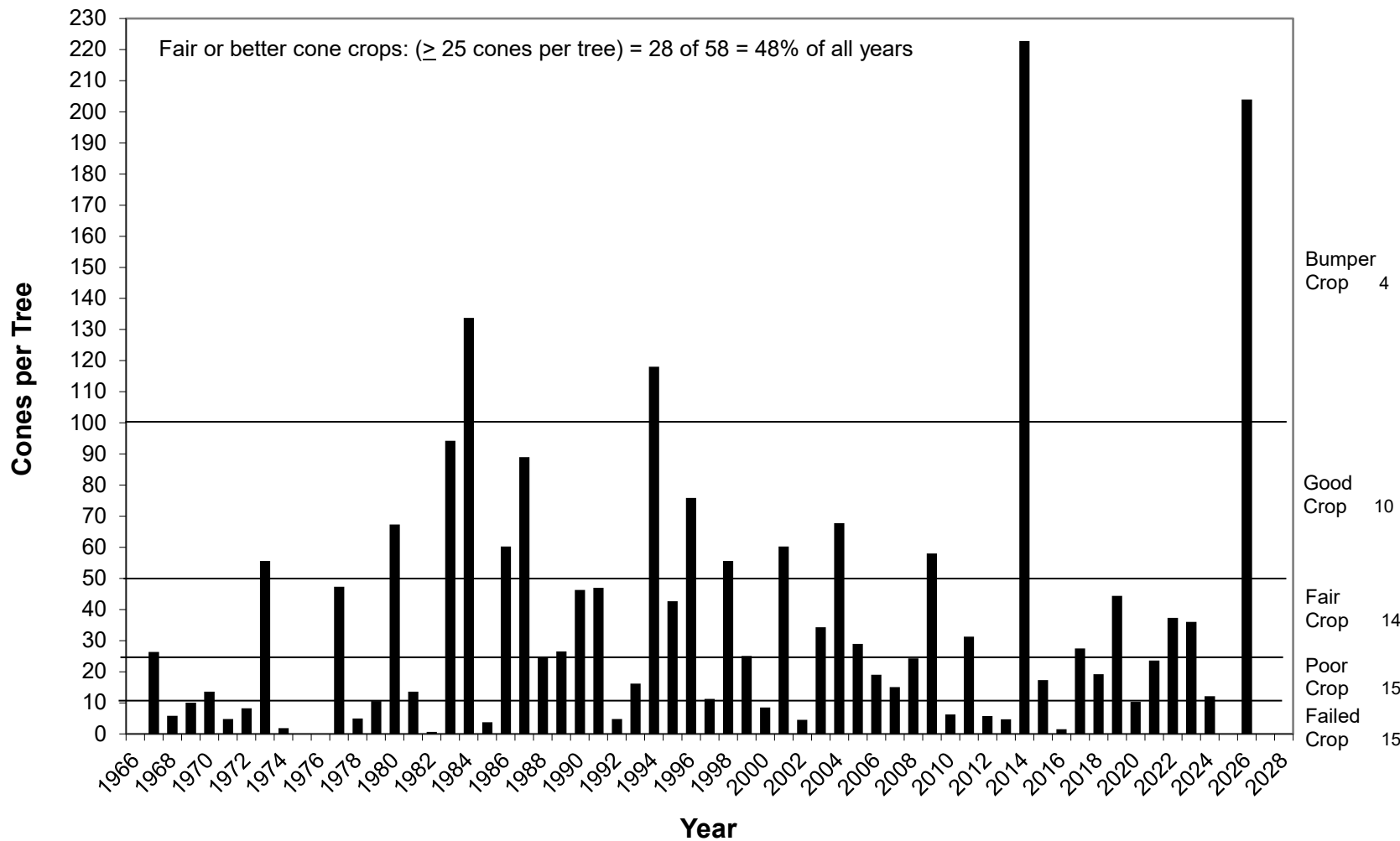
2015	<b>12.4</b>	17.3	16.8	2.8	21.4	6.5	14.7	32.0	1.1	4.3	1.2	
2016	<b>3.4</b>	1.5	1.0	2.6	0.6	1.5	3.8	5.9	6.9	12.5	0.4	
2017	<b>61.9</b>	27.5	154.0	34.9	35.6	148.6	28.2	113.1	7.1	1.2	29.0	
2018	<b>7.2</b>	19.2	9.2	0.4	0.8	1.5	13.1	3.8	13.9	12.0	0.4	
2019	<b>17.2</b>	44.4	24.0	15.1	5.8	17.5	12.2	9.0	17.5	19.6	13.0	
2020	<b>23.9</b>	10.3	51.3	20.5	13.6	32.3	42.0	20.7	20.7	19.8	0.9	
2021	<b>18.6</b>	23.6	11.2	0.8	0.2	55.6	6.2	5.7	40.0	49.7	2.4	
2022	<b>41.0</b>	37.3	110.4	86.5	35.8	62.7	14.0	11.5	32.4	26.7	6.4	
2023	<b>10.3</b>	36.0	20.2	7.1	1.3	1.0	1.6	17.6	13.9	2.3	5.2	
2024	<b>6.6</b>	12.1	6.6	0.3	0.6	5.8	7.3	8.9	12.3	12.3	5.2	
2025	<b>12.4</b>	0.0	25.6	1.2	3.6	29.6	8.2	8.1	18.0	26.9	3.0	
2026	<b>53.9</b>	204.0	26.4	39.8	4.8	39.5	28.8	47.1	26.0	4.4	19.0	153.2
Mean	<b>27.3</b>	<b>37.4</b>	<b>27.7</b>	<b>16.3</b>	<b>19.1</b>	<b>30.0</b>	<b>21.7</b>	<b>27.0</b>	<b>28.3</b>	<b>21.8</b>	<b>7.2</b>	<b>153.2</b>
Year	<b>Southern Region</b>	LA-Kisatchie National Forest	W FL-Blackwater River State Forest	W FL-Eglin Air Force Base	W FL-Apalachicola National Forest	SW GA-Jones Research Center	Red Hills-Tall Timbers Research Station	W GA-Fort Benning Military Base	SC-Sand Hills State Forest	NC-Bladen Lakes State Forest	FL Pen.-Ordway-Swisher Biological Station	AL - Tuskegee National Forest

Data are the average number of cones per longleaf pine tree forecasted for the fall (late October) with estimates based on counts of green cones during the spring (April to June) of each year.

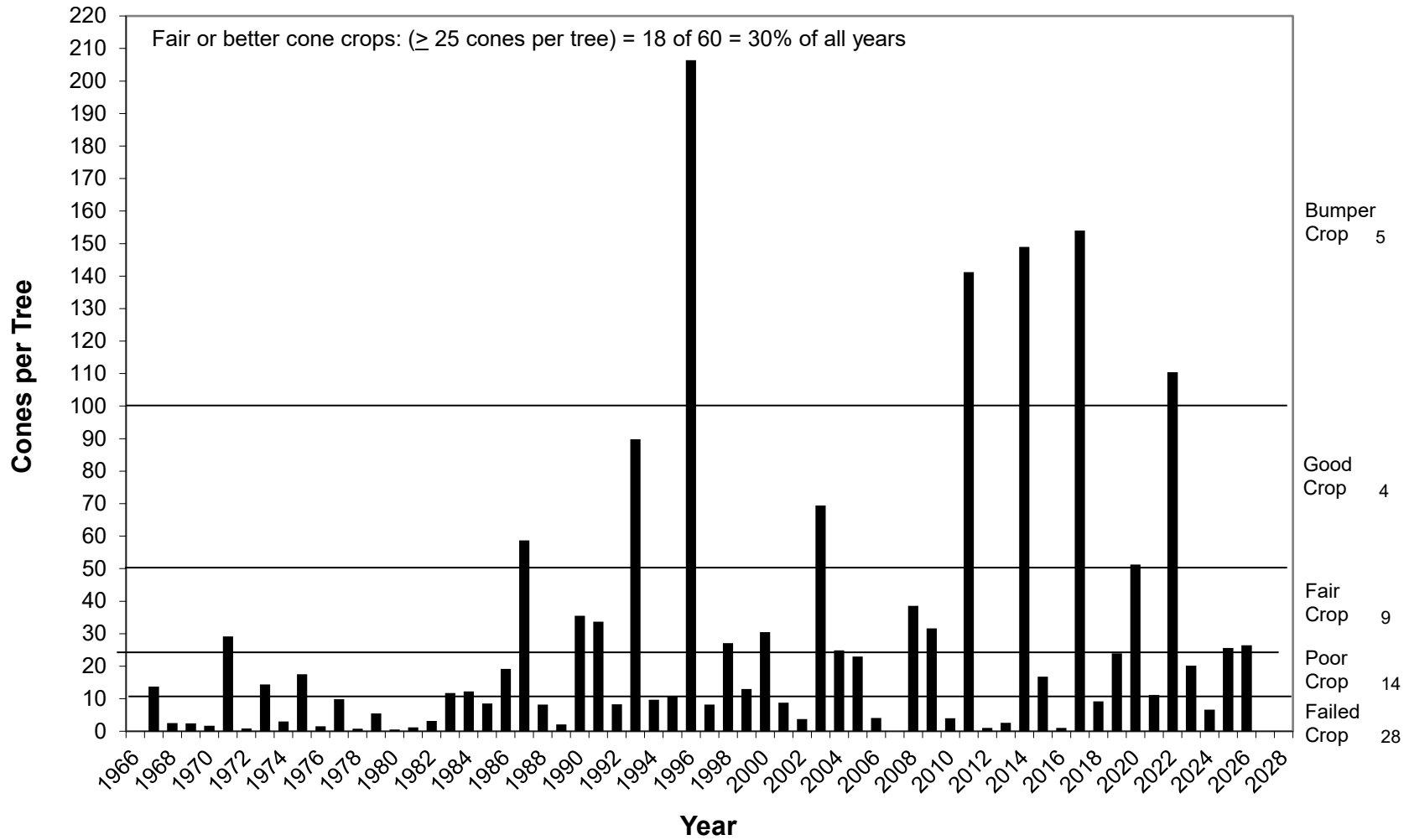
## Longleaf Pine Cone Production in Southern Region (since 1966)



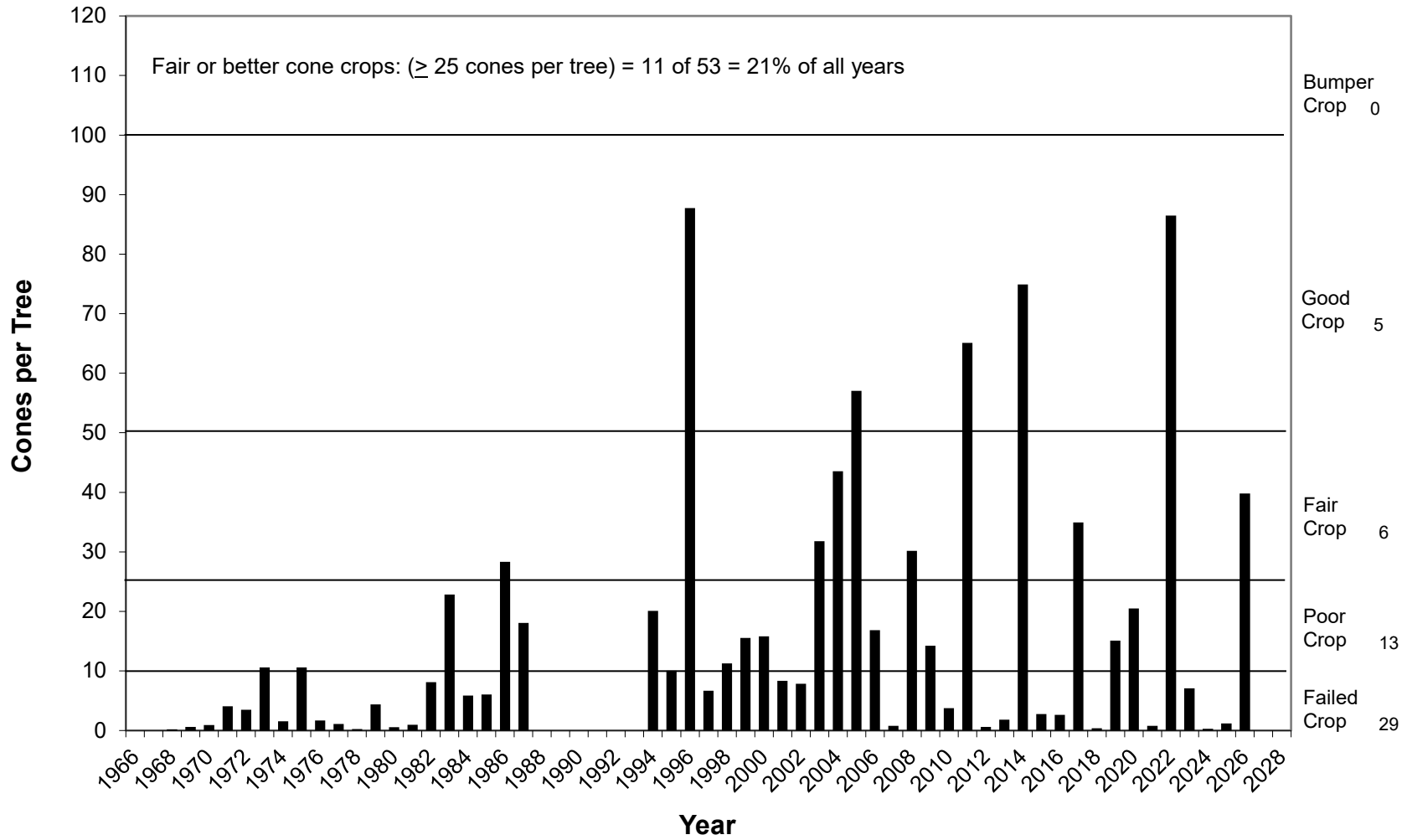
### Longleaf Pine Cone Production in Louisiana at Kisatchie NF (since 1967)



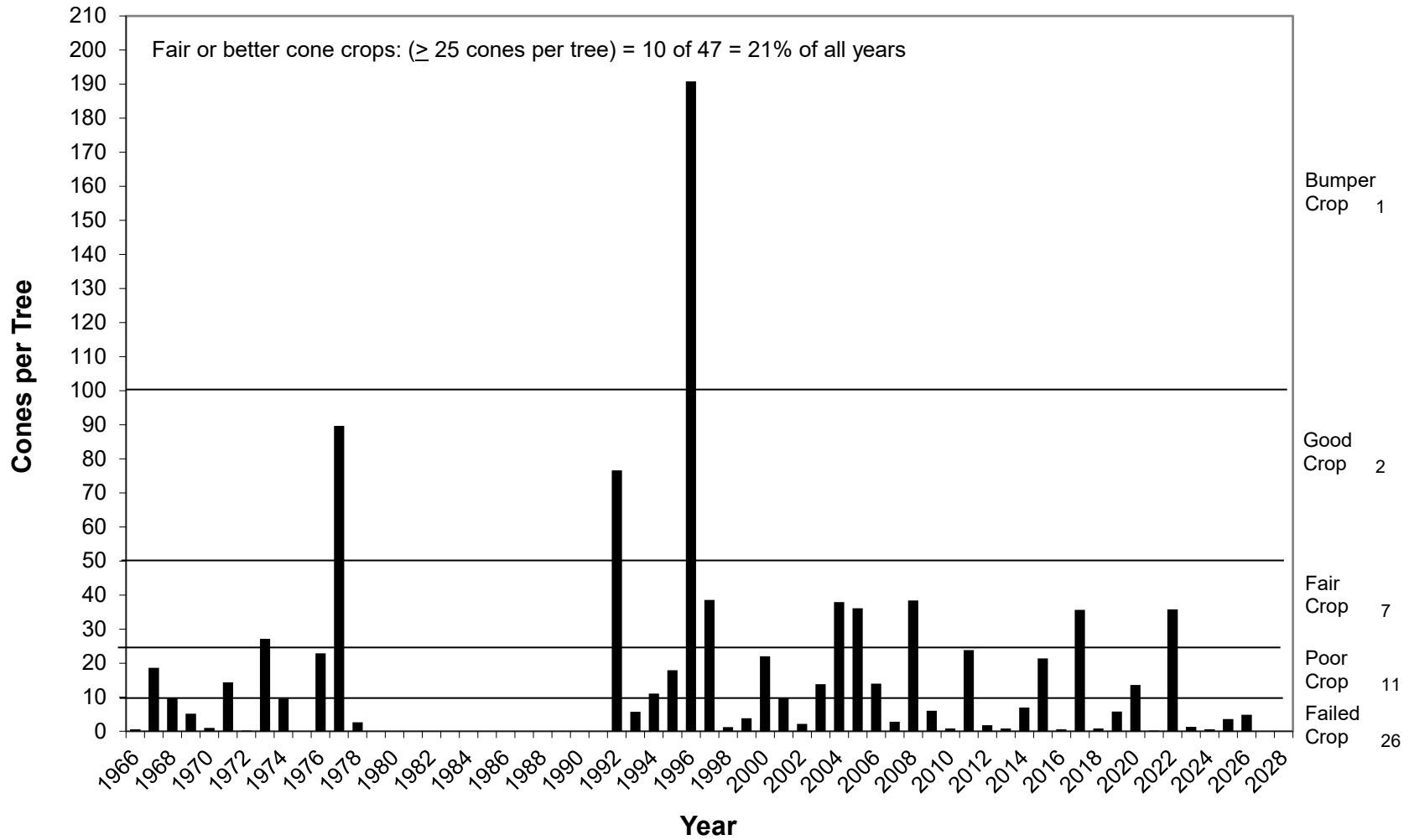
### Longleaf Pine Cone Production in West Florida at Blackwater River SF (since 1967)



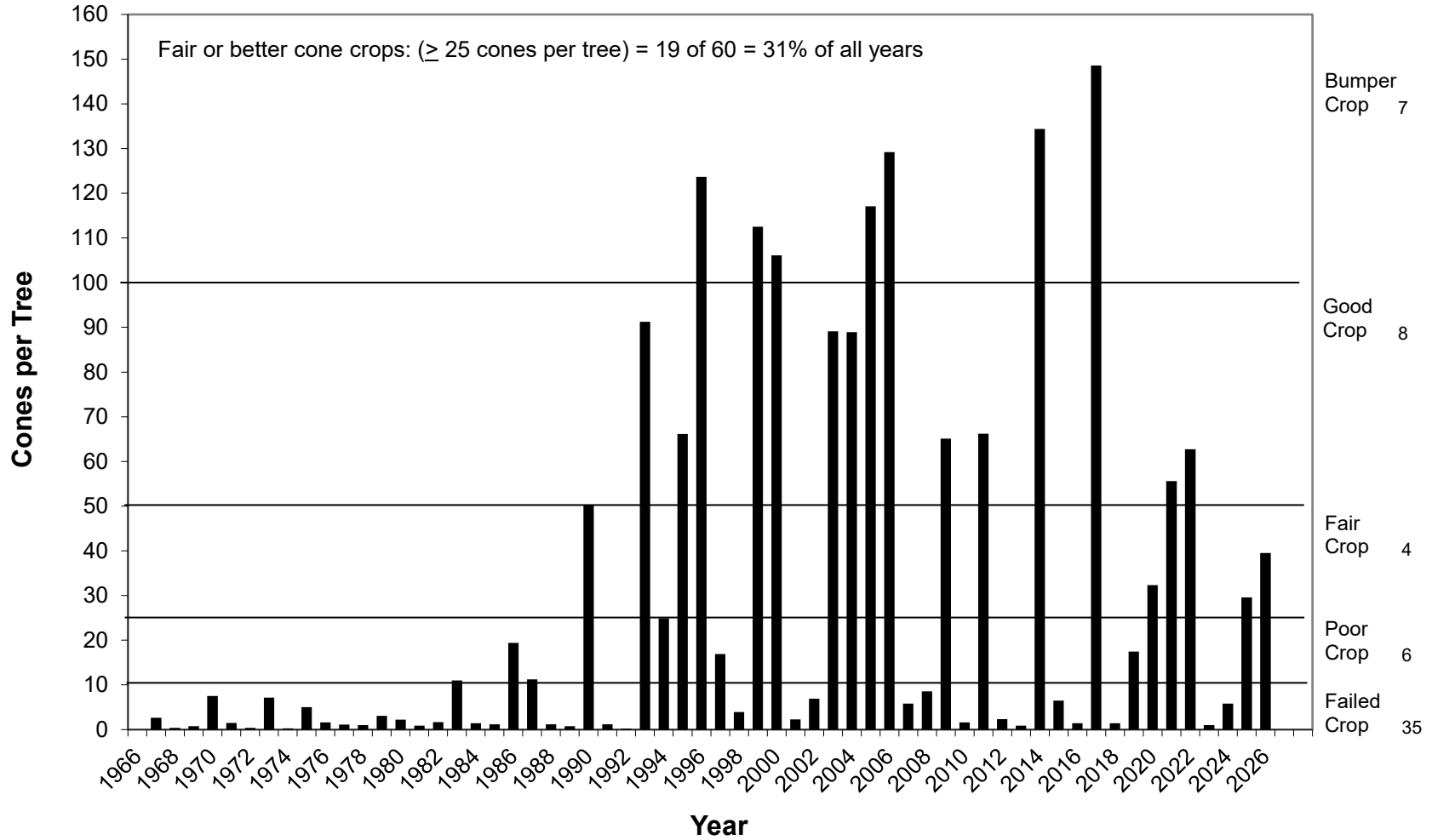
### Longleaf Pine Cone Production in Western Florida at Eglin AFB (since 1968)



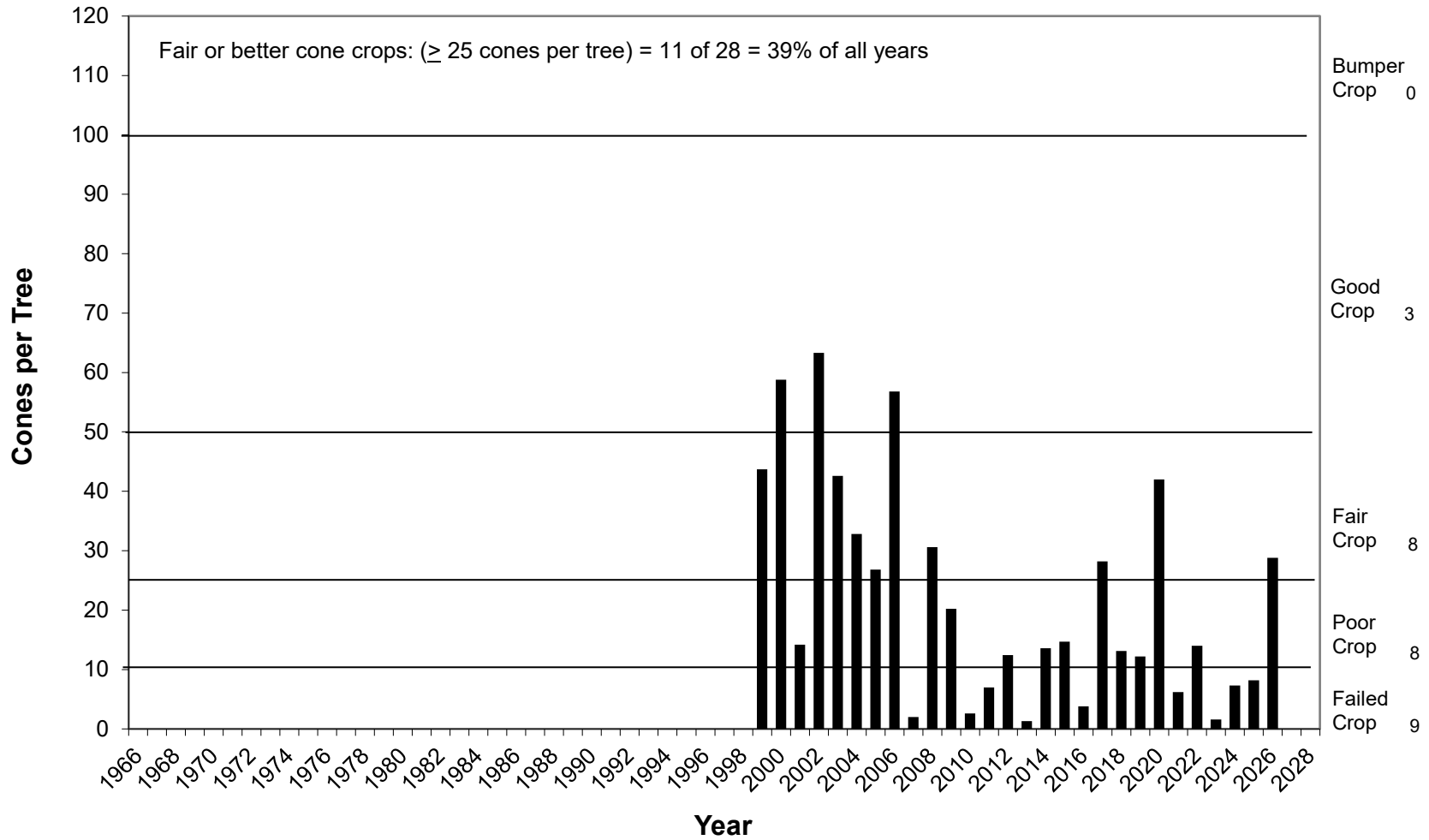
## Longleaf Pine Cone Production in Western Florida at Apalachicola NF (since 1966)



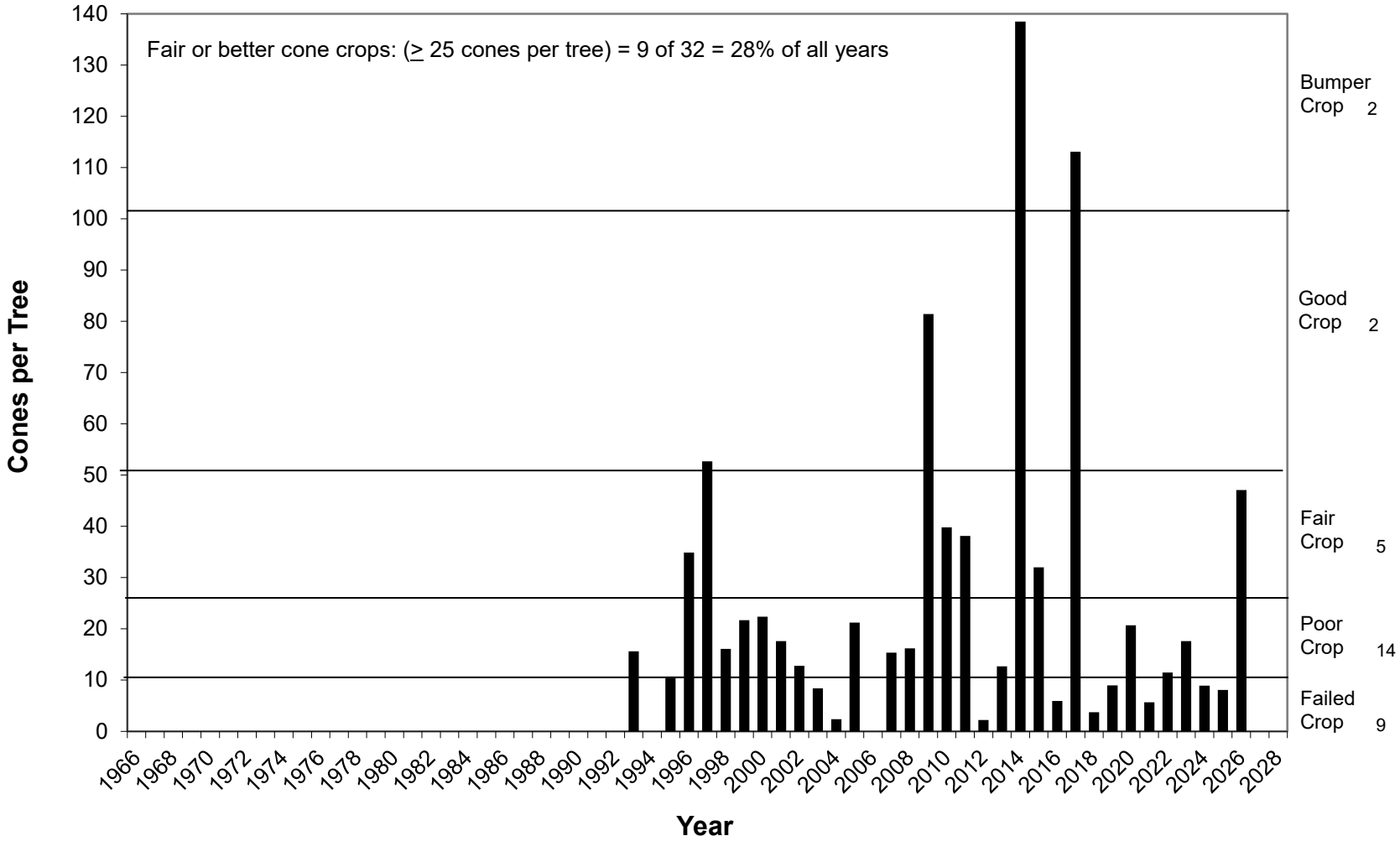
**Longleaf Pine Cone Production in Southwestern Georgia (since 1967):  
at Southlands Forest Research Center from 1967 to 1996  
and Jones Ecological Research Center since 1997**



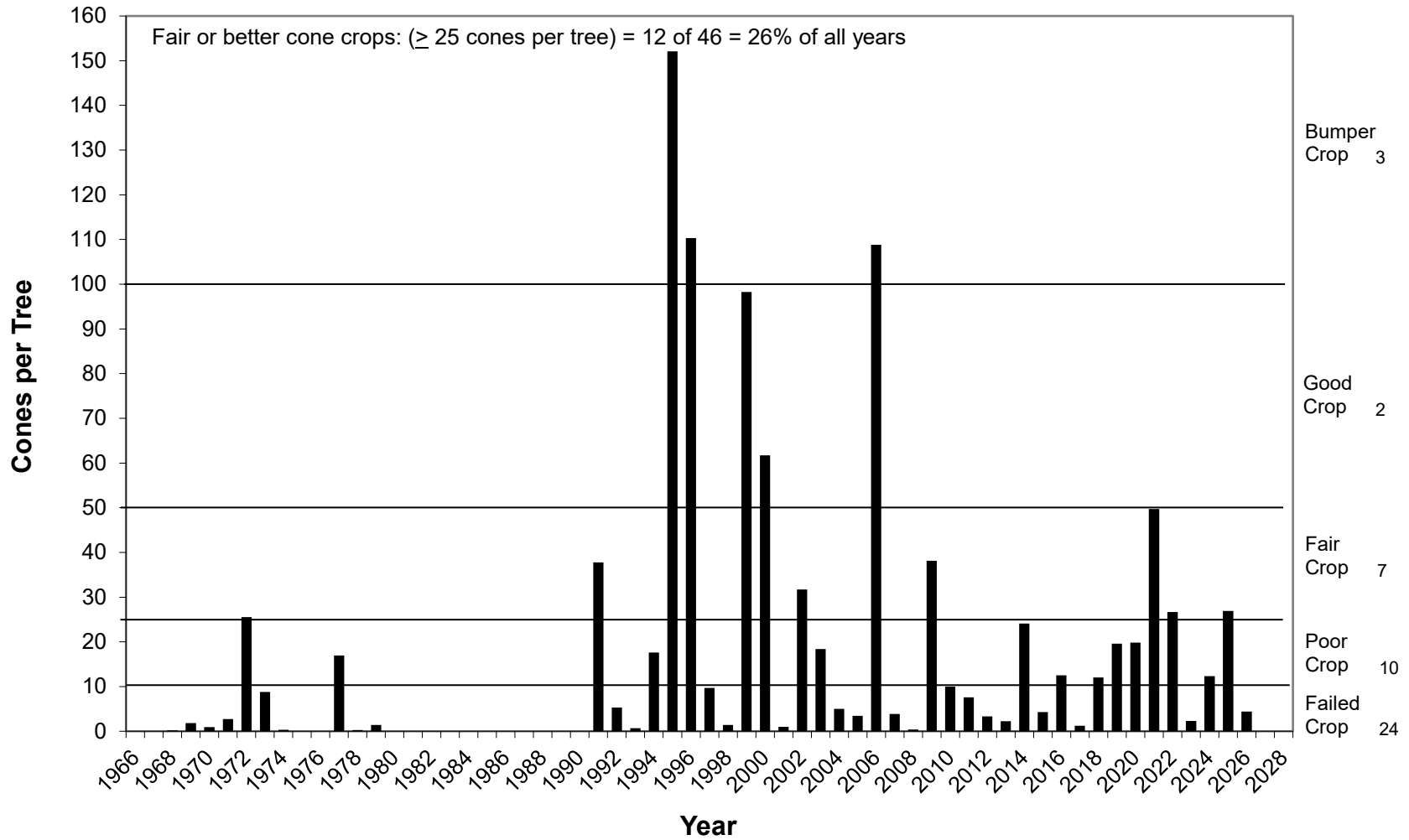
**Longleaf Pine Cone Production in the Red Hills (since 1999):  
at Pebble Hill Plantation from 1999 to 2009  
and Tall Timbers Research Station since 2010**



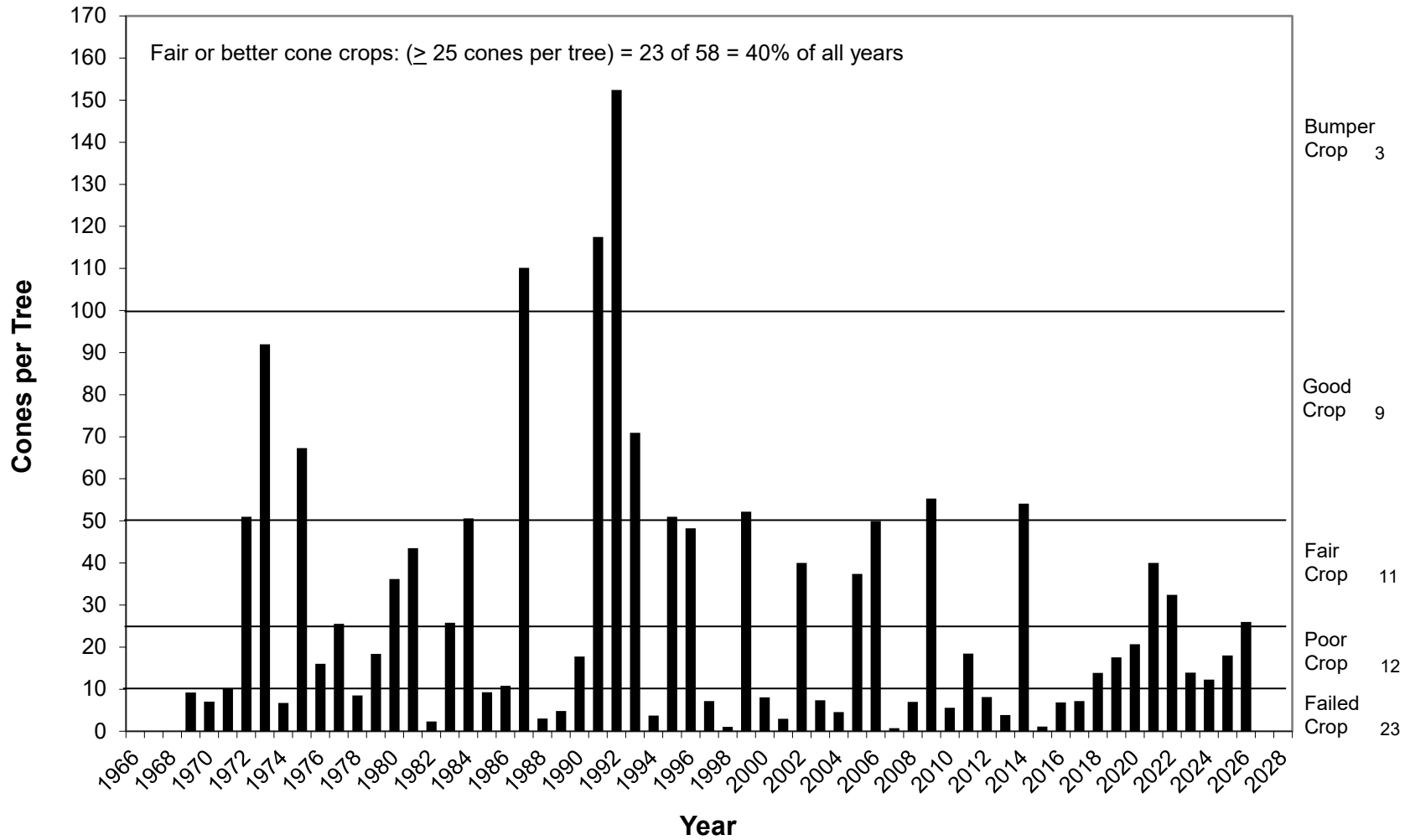
### Longleaf Pine Cone Production in Western Georgia at Fort Benning (since 1993)



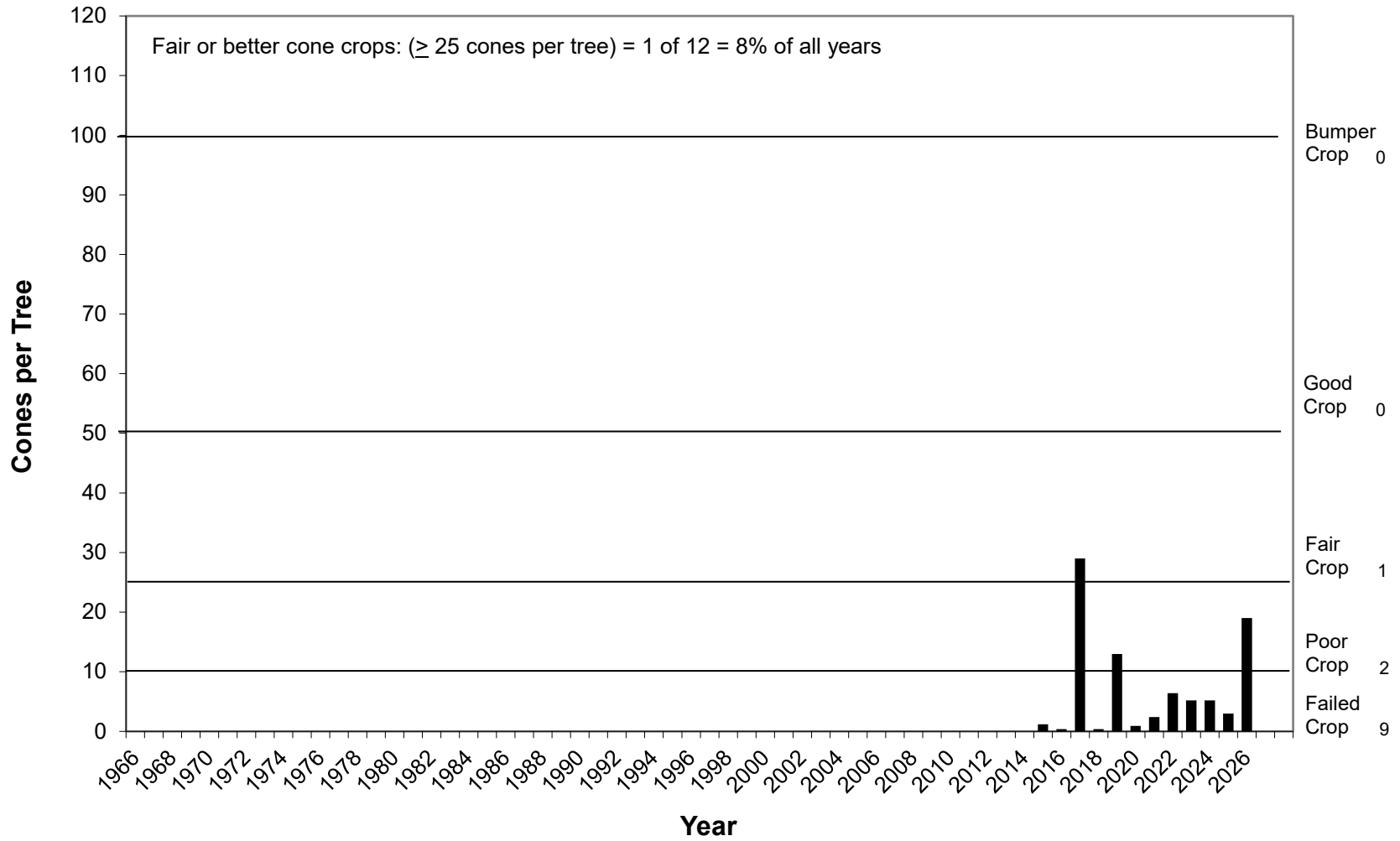
## Longleaf Pine Cone Production in North Carolina at Bladen Lakes SF (since 1968)



## Longleaf Pine Cone Production in South Carolina at Sand Hills SF (since 1969)



### Longleaf Pine Cone Production on Florida Peninsula at Ordway-Swisher Biological Station (since 2015)



### Longleaf Pine Cone Production in Alabama at Tuskegee National Forest (since 2026)

