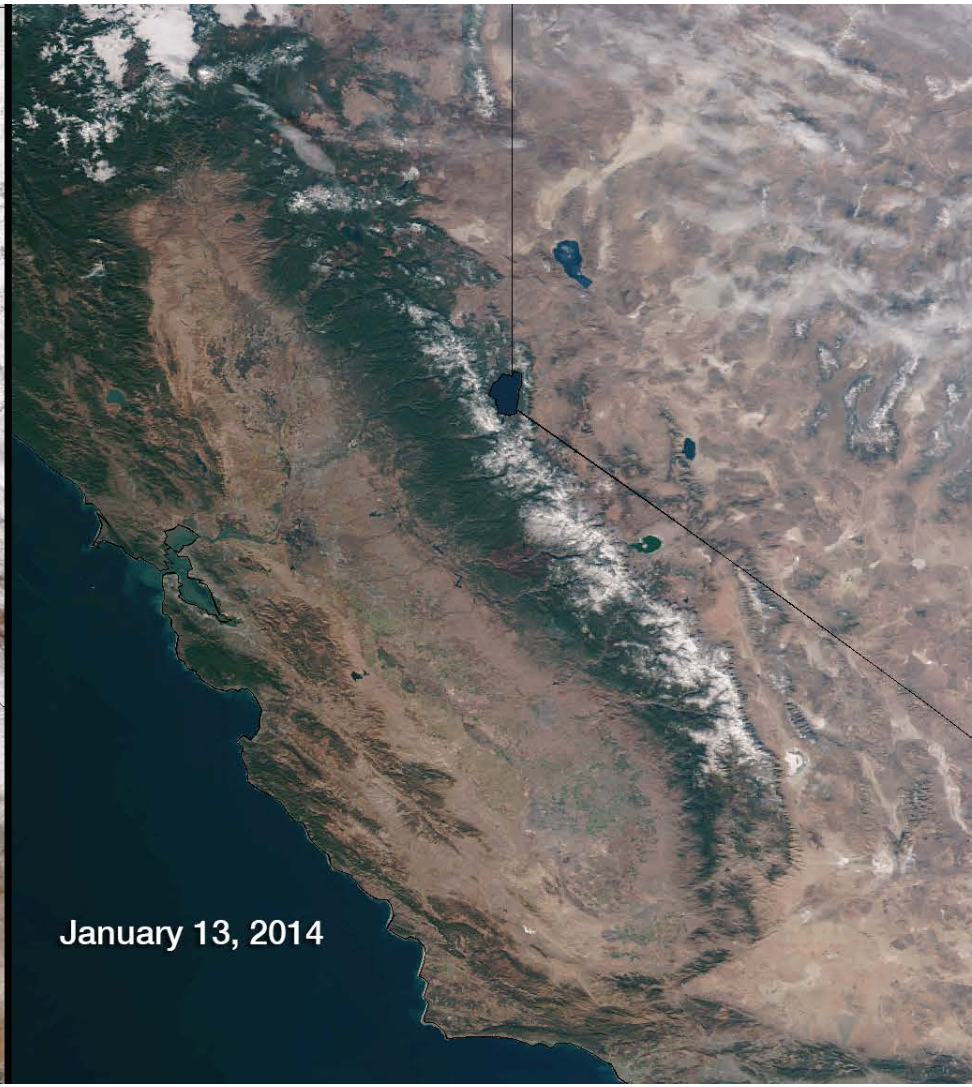
“CA Drought of 2011-14: Brief History and Current Impacts”

Brad Rippey, USDA Meteorologist, Washington, D.C.



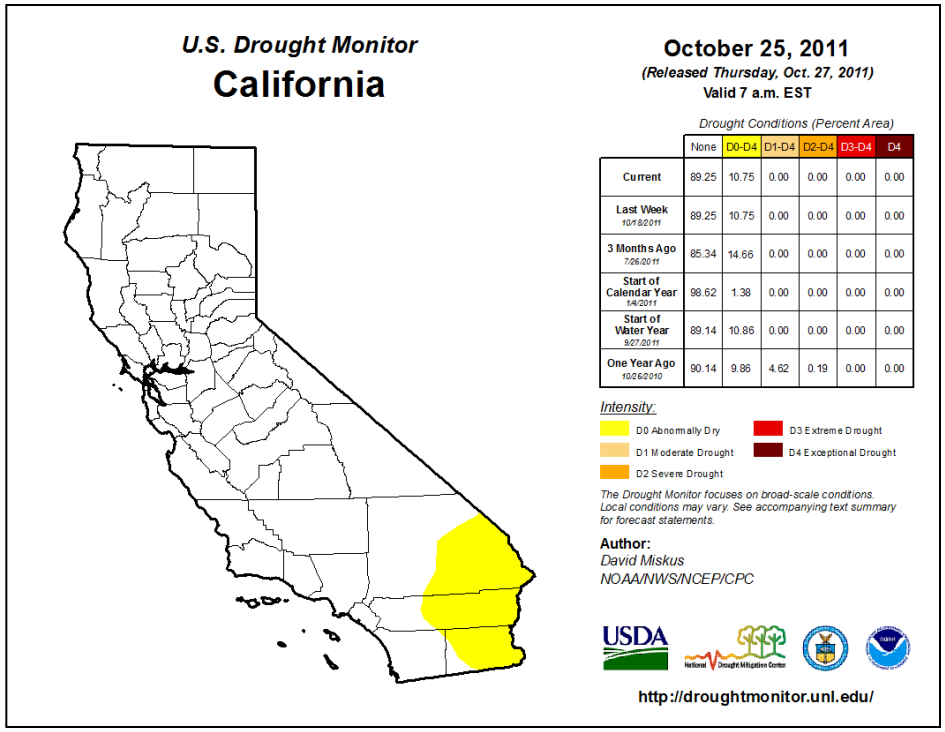
USDA

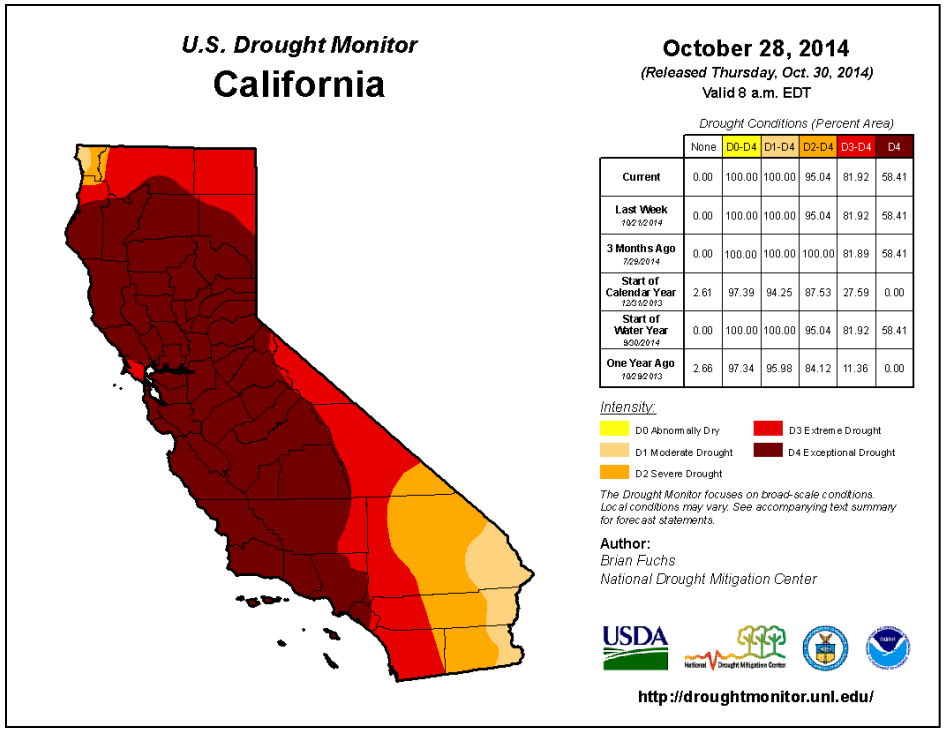
Ranching and California’s Drought

UC Davis

Nov. 7, 2014

A Comparison to 3 Years Ago

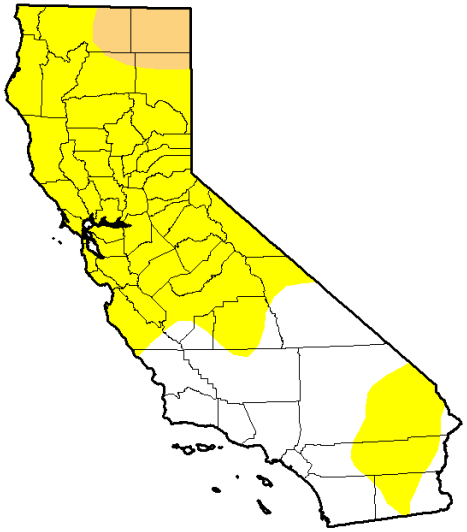




No Drought; 11% Abnormally Dry

All in Drought; 82% in D3 to D4

U.S. Drought Monitor
California



December 27, 2011
(Released Thursday, Dec. 29, 2011)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.91	66.09	5.41	0.00	0.00	0.00
Last Week 12/20/2011	71.58	28.42	0.00	0.00	0.00	0.00
3 Months Ago 9/27/2011	89.14	10.86	0.00	0.00	0.00	0.00
Start of Calendar Year 1/4/2011	98.62	1.38	0.00	0.00	0.00	0.00
Start of Water Year 9/27/2011	89.14	10.86	0.00	0.00	0.00	0.00
One Year Ago 12/28/2010	98.62	1.38	0.00	0.00	0.00	0.00

Intensity:

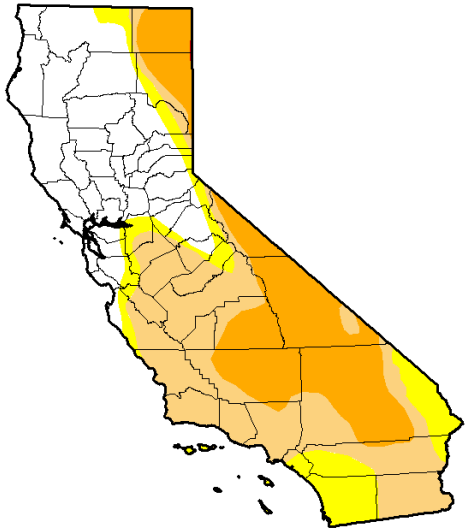
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brad Rippey
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
California



December 25, 2012
(Released Thursday, Dec. 27, 2012)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.94	69.06	56.19	25.22	0.05	0.00
Last Week 12/18/2012	30.94	69.06	56.19	26.15	0.05	0.00
3 Months Ago 9/25/2012	11.95	88.05	69.41	22.27	1.14	0.00
Start of Calendar Year 1/3/2012	29.91	70.09	46.34	0.00	0.00	0.00
Start of Water Year 9/25/2012	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago 12/27/2011	33.91	66.09	5.41	0.00	0.00	0.00

Intensity:

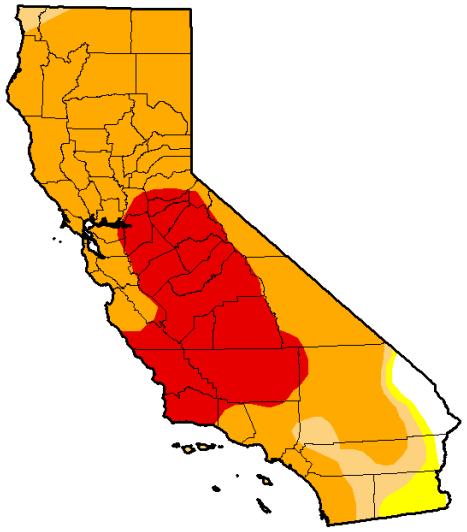
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Heim
NCDC/NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
California



December 31, 2013
(Released Thursday, Jan. 2, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.61	97.39	94.25	87.53	27.59	0.00
Last Week 12/24/2013	2.61	97.39	94.25	84.88	27.59	0.00
3 Months Ago 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
Start of Calendar Year 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 1/1/2013	31.75	68.25	55.32	22.50	0.00	0.00

Intensity:

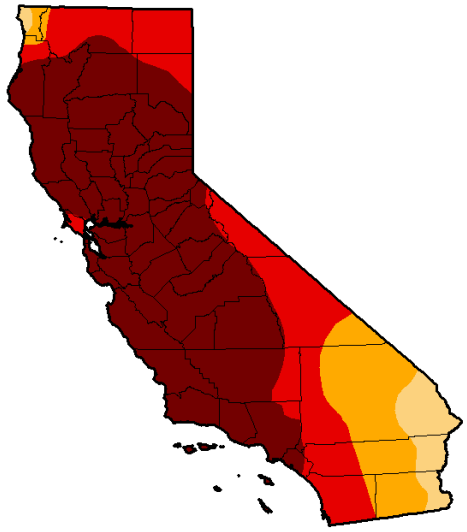
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Matthew Rosencrans
CPC/NCEP/NWS/NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
California



October 28, 2014
(Released Thursday, Oct. 30, 2014)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.04	81.92	58.41
Last Week 10/21/2014	0.00	100.00	100.00	95.04	81.92	58.41
3 Months Ago 7/29/2014	0.00	100.00	100.00	100.00	81.89	58.41
Start of Calendar Year 12/31/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 10/29/2013	2.66	97.34	95.98	84.12	11.36	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center

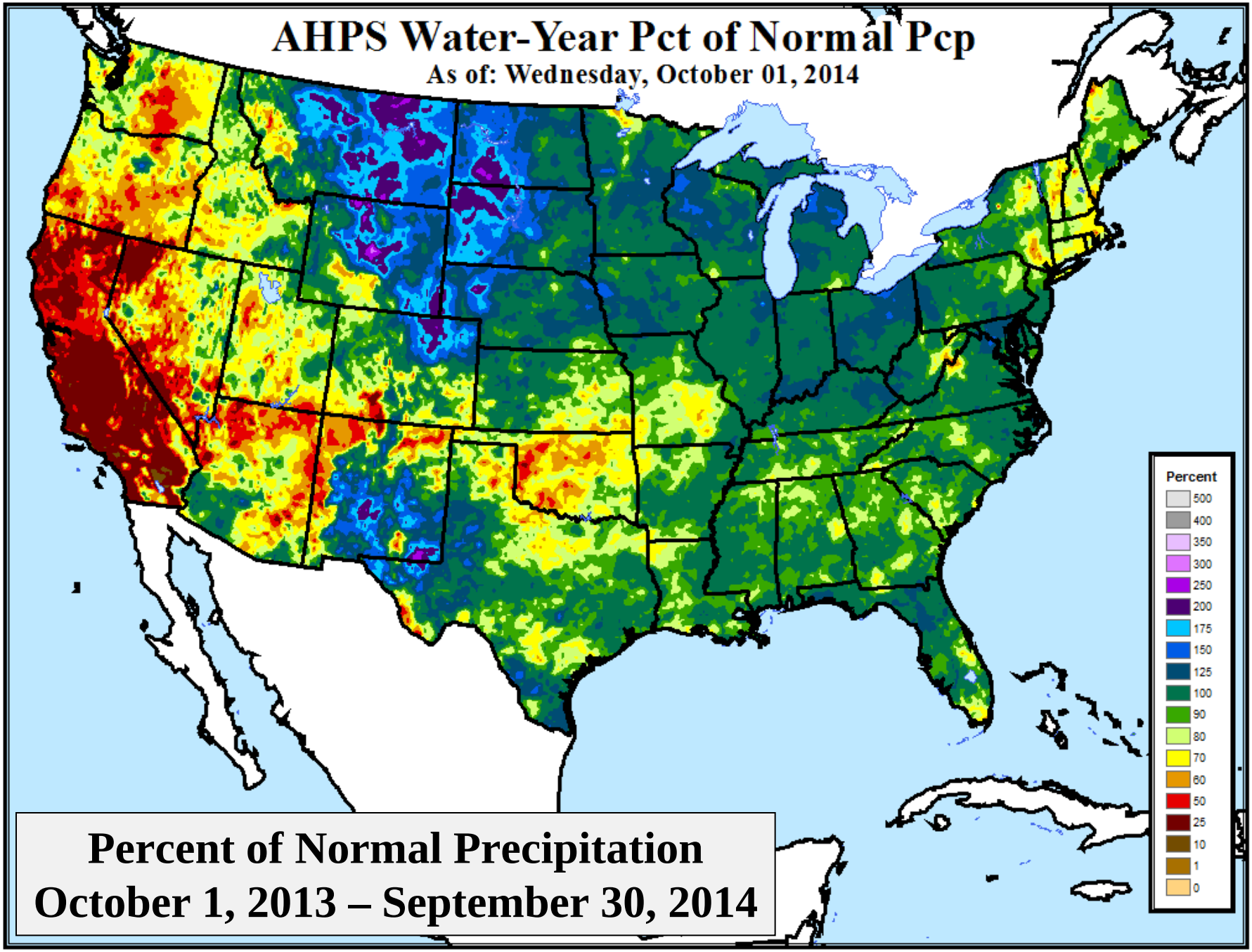
http://droughtmonitor.unl.edu/

Percentiles and the U.S. Drought Monitor

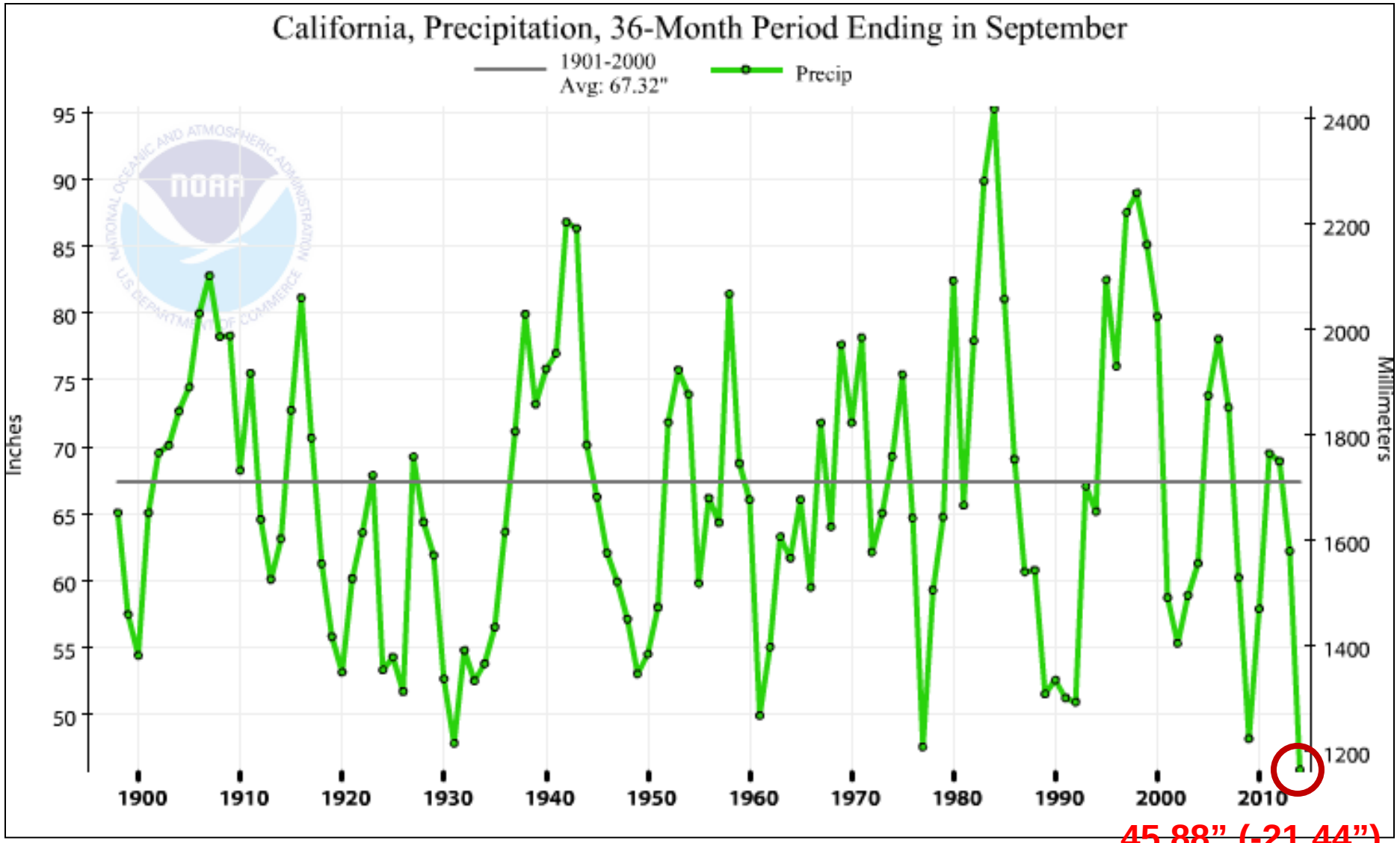
- Advantages of percentiles:
  - Can be applied to any parameter
  - Can be used for any length of data record
  - Puts drought in historical perspective

- D4, Exceptional Drought: once per 50 to 100 years
- D3, Extreme Drought: once per 20 to 50 years
- D2, Severe Drought: once per 10 to 20 years
- D1, Moderate Drought: once per 5 to 10 years
- D0, Abnormally Dry: once per 3 to 5 years

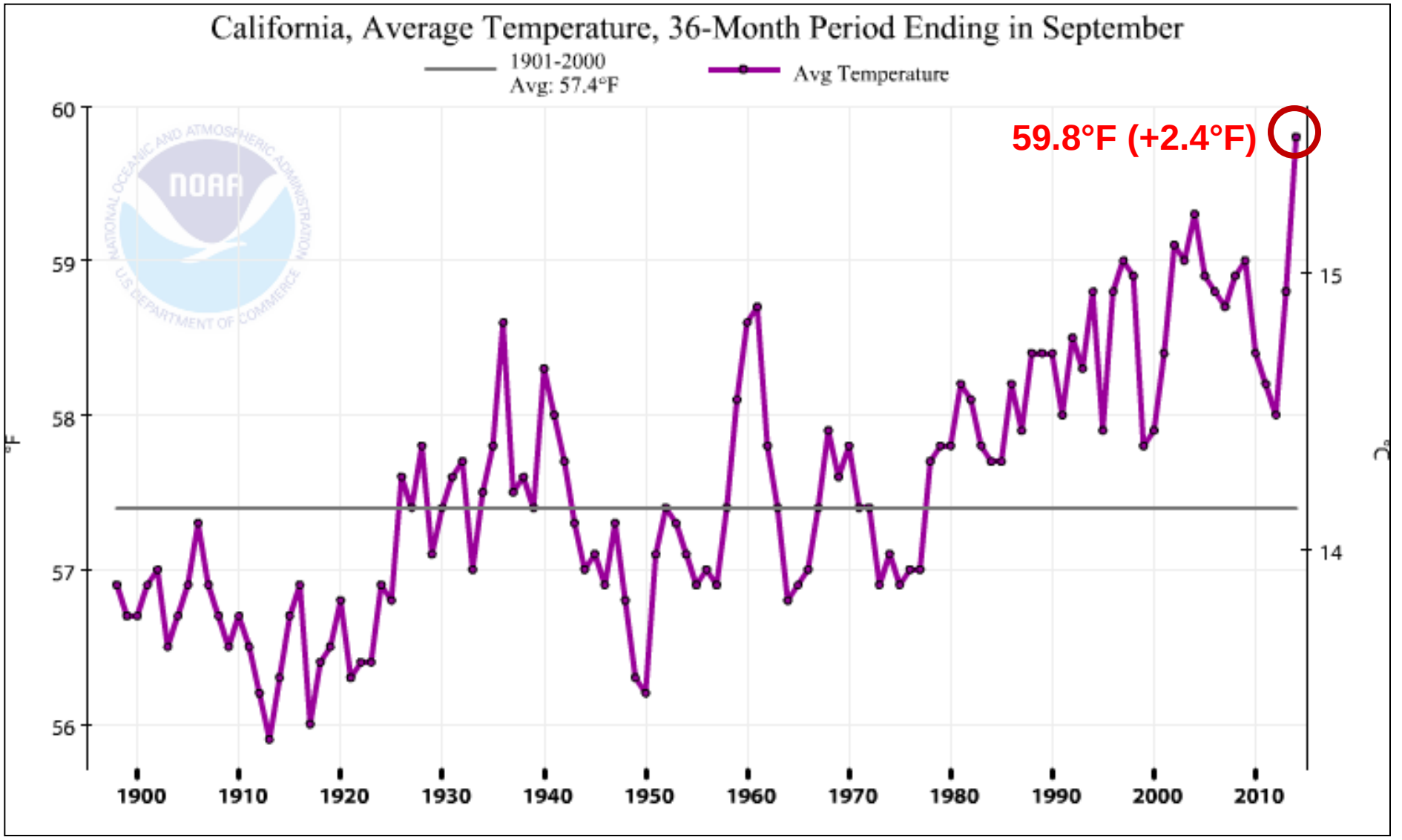
USDA


AHPS Water-Year Pct of Normal Pcp
As of: Wednesday, October 01, 2014
Percent
500
400
350
300
250
200
175
150
125
100
90
80
70
60
50
25
10
1
0
Percent of Normal Precipitation
October 1, 2013 – September 30, 2014

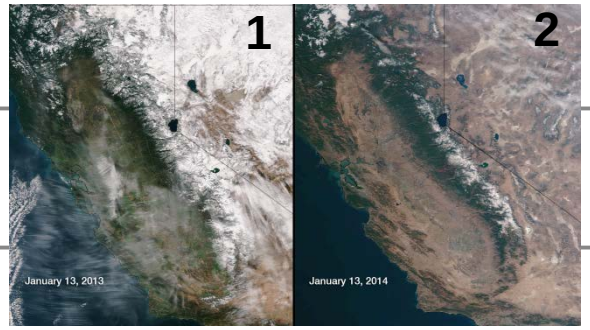
California Precipitation
All 36-Month Periods Ending in September



California Average Temperature
All 36-Month Periods Ending in September



Daily Sierra Nevada Snowpack (Inches) vs. Normal



Normal

2012-13

2011-12

2013-14

1

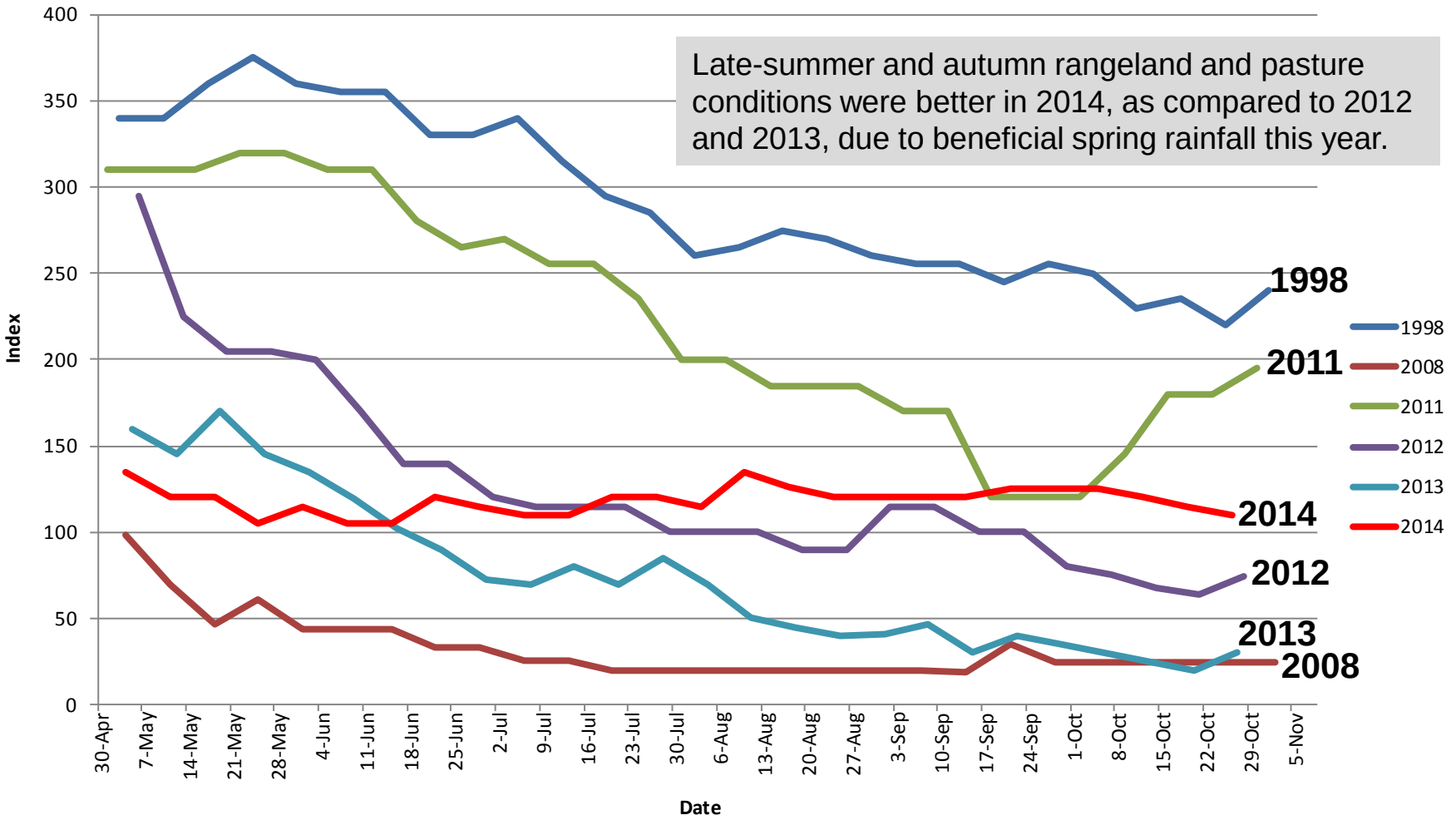
2

30
25
20
15
10
5
0

1-Dec
8-Dec
15-Dec
22-Dec
29-Dec
5-Jan
12-Jan
19-Jan
26-Jan
2-Feb
9-Feb
16-Feb
23-Feb
2-Mar
9-Mar
16-Mar
23-Mar
30-Mar

Source: California Department of Water Resources

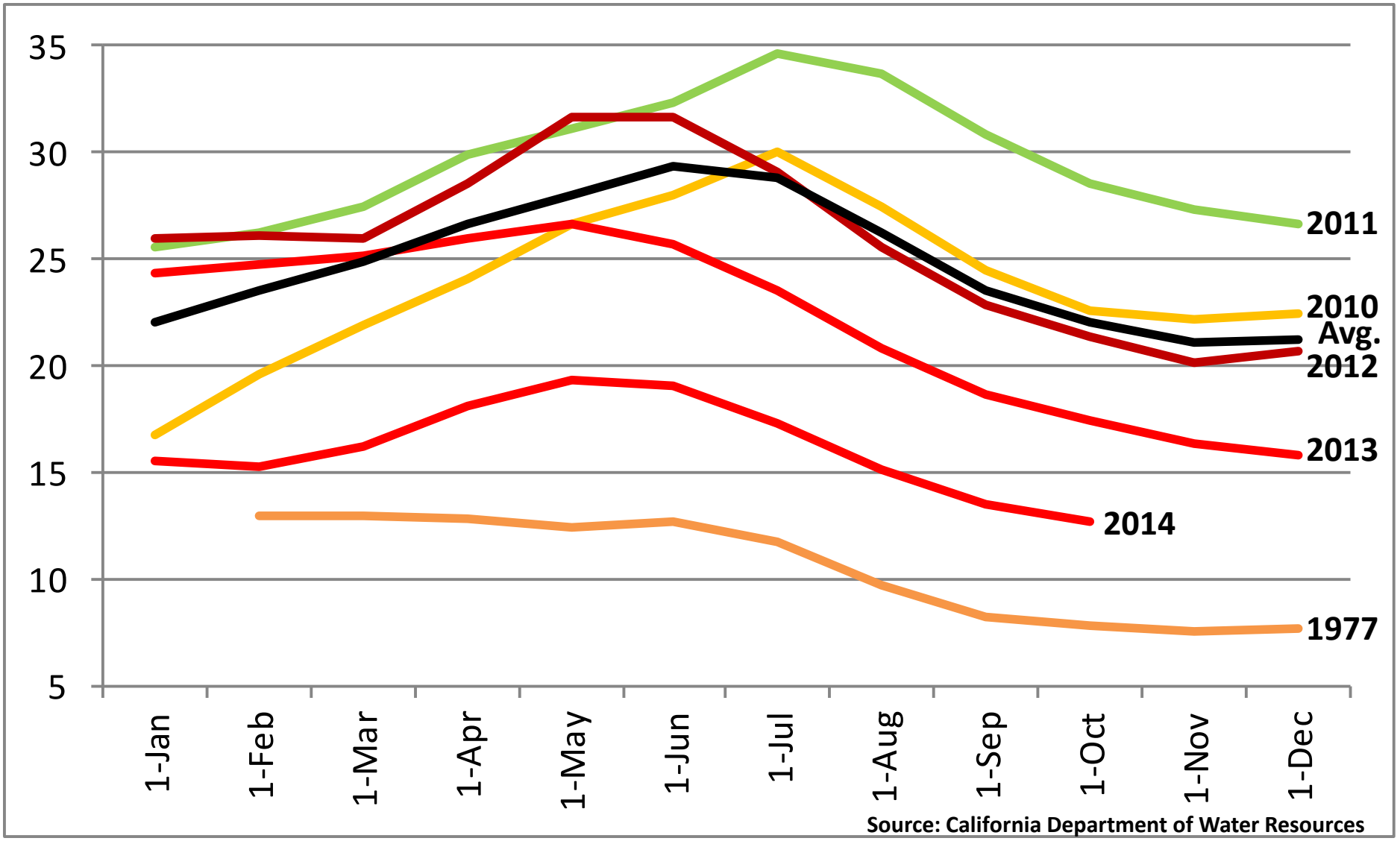
CA PASTURE AND RANGE Condition Index



Based on NASS crop progress data.

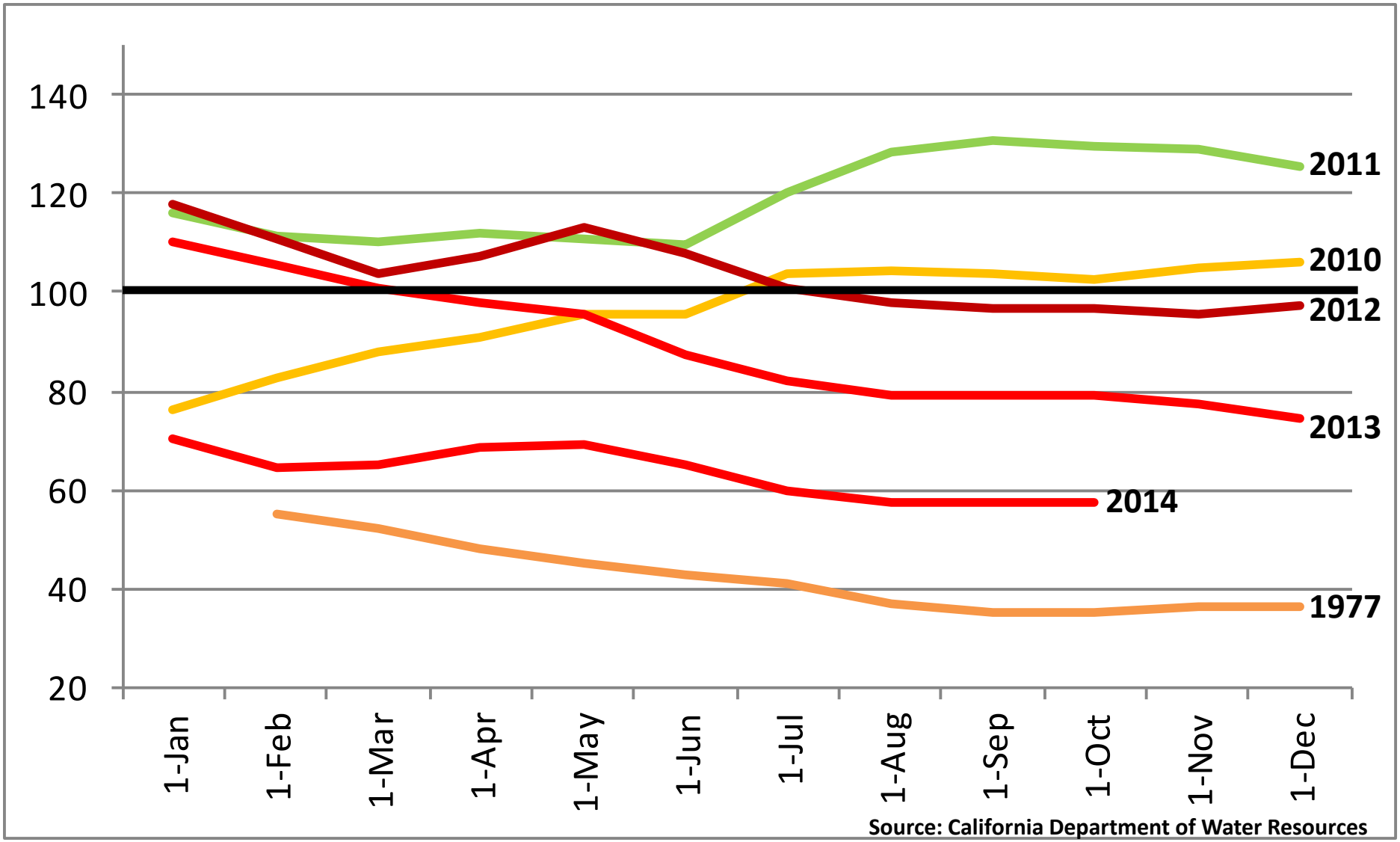
Index Weighting: Excellent = 4; Good = 3; Fair = 2; Poor = 1; Very Poor = 0

California Reservoir Storage, Million Acre-Feet, 1977 and 2010-14



Note: One acre-foot is equal to 325,851 gallons, or the amount of water it takes to cover one acre to a depth of one foot.

California Reservoir Storage, Percent of Normal, 1977 and 2010-14



California Reservoirs, Recharge and Withdrawal
Million Acre-Feet and Percent of Average

	Recharge	**Withdrawal**	
2010-11	12.47 (151%)	**2011**	8.78 (107%)
2011-12	5.79 (70%)	**2012**	11.54 (140%)
2012-13	6.52 (79%)	**2013**	11.49 (139%)
2013-14	4.17 (51%)	**2014**	TBD
Avg.	**8.24**	**Avg.**	**8.24**

Notes: Recharge and withdrawal values are based on end-of-month statistics, not daily readings. Through Sep. 30, 2014, withdrawal has totaled 6.74 million acre-feet, 92% of average.

California Agriculture, 2014 v. 2013

[acres unless otherwise noted; as of Oct. 20, 2014]

Parameter	***2014***	***2013***	***Drop***
Total Field Crops Planted	3,580,000	4,009,000	10.7%
Wheat Harvested	*215,000*	*394,000*	*45.4%*
Barley Harvested	*25,000*	*42,000*	*40.5%*
Corn Harvested	*110,000*	*180,000*	*38.9%*
Oats Harvested	*10,000*	*15,000*	*33.3%*
Sunflower Harvested	*42,400*	*58,000*	*26.9%*
Rice Harvested	*428,000*	*561,000*	*23.7%*
Cotton Harvested	*213,000*	*278,000*	*23.4%*

California Production, Selected Crops

Crop	2013	2014	Reduction
Corn	35.1*	17.6	50%
Rice	47.6*	36.4	24%
Cotton	943*	730	23%
Hay	1.836 *	1.496	19%

* Respective production units, by crop, are: **corn**, million bushels; **cotton**, thousand 480-pound bales; **rice**, million hundredweight (cwt); and **hay (not including alfalfa)**, million tons.

Source: U.S. Crop Production Highlights, October 10, 2014: http://usda.mannlib.cornell.edu/usda/current/CropProd/CropProd-10-10-2014.pdf

California Agricultural Production Statistics, 2012

- The state's 80,500 farms and ranches received a record $44.7 billion for their output in 2012, up from $43.3 billion in 2011 and $37.9 billion in 2010.
- California is the number one state in cash farm receipts with 11.3 percent of the U.S. total.
- The state accounted for 15 percent of domestic receipts for crops and 7.1 percent of the U.S. revenue for livestock and livestock products.

Source: California Department of Agriculture: http://www.cdfa.ca.gov/Statistics/

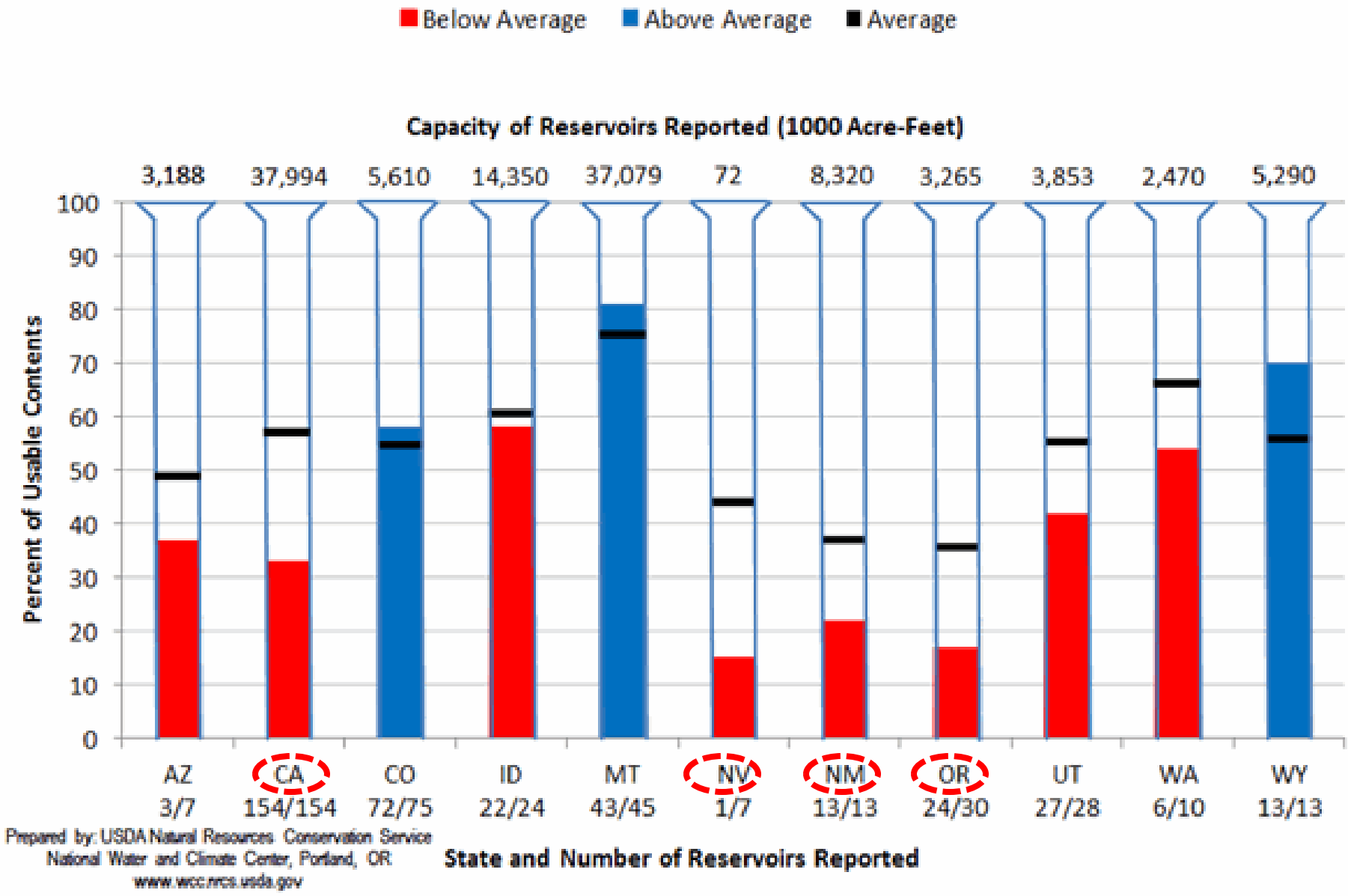
California Agricultural Production Statistics, 2012

- Milk: $6.90 billion
- Grapes: $4.45 billion
- Almonds: $4.35 billion
- Nursery plants: $3.54 billion
- Cattle, Calves: $3.30 billion
- Strawberries: $1.94 billion
- Lettuce: $1.45 billion
- Walnuts: $1.35 billion
- Hay: $1.25 billion
- Tomatoes: $1.17 billion

Note: These ten commodities accounted for approximately two-thirds of California's agricultural cash receipts in 2012.

Source: California Department of Food and Agriculture

Reservoir Storage as of October 1, 2014

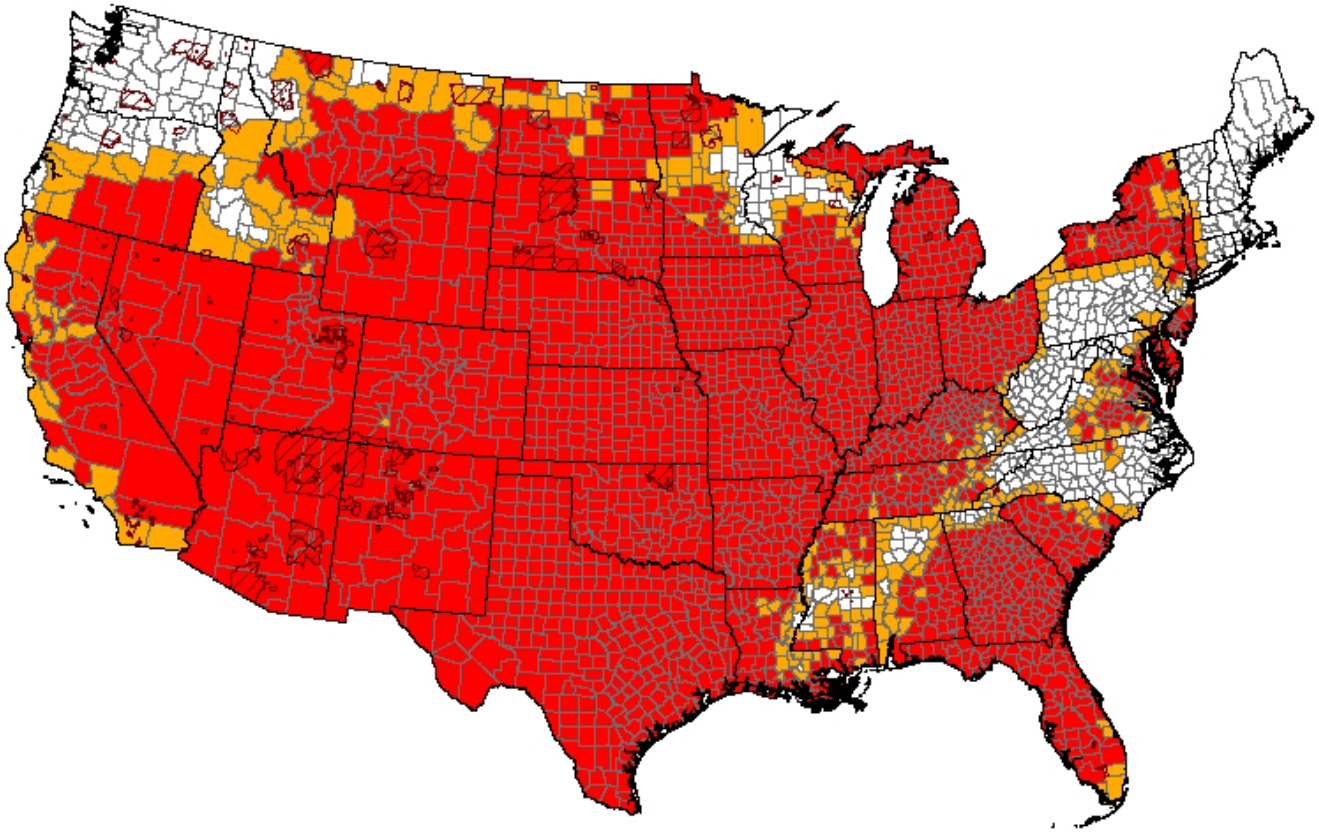


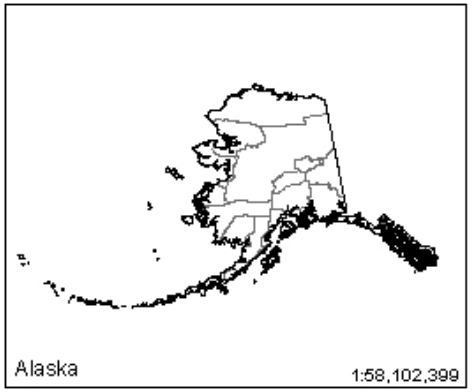
Prepared by: USDA Natural Resources Conservation Service
National Water and Climate Center, Portland, OR
www.wcc.nrcs.usda.gov

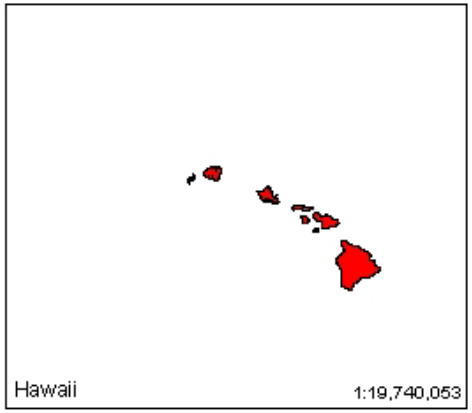
“Fast Track” Secretarial Disaster Designation Process

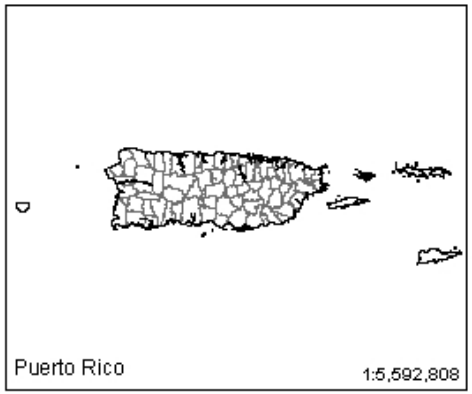
- Streamlines the USDA Secretarial designation process by eliminating steps from the current process;
- A reduced interest rate for emergency loans that effectively lowers the current rate from 3.75 percent to 2.25 percent;
- Preserves the ability of a state governor or Indian Tribal Council to request a Secretarial Disaster Designation;
- Removes the requirement that a request for a disaster designation be initiated only by a state governor or Indian Tribal Council;
- Further streamlines the disaster designation process for severe drought occurrences by utilizing the U.S. Drought Monitor as a tool to automatically trigger disaster areas with no further documentation;
- Does not impose any new requirements on producers or the public.
- In 2012, led to drought disaster declarations in 2,254 primary counties in 39 states.

2012 Secretarial Drought Designations - All Drought









All Drought Disaster Incidents as of 2/13/2013

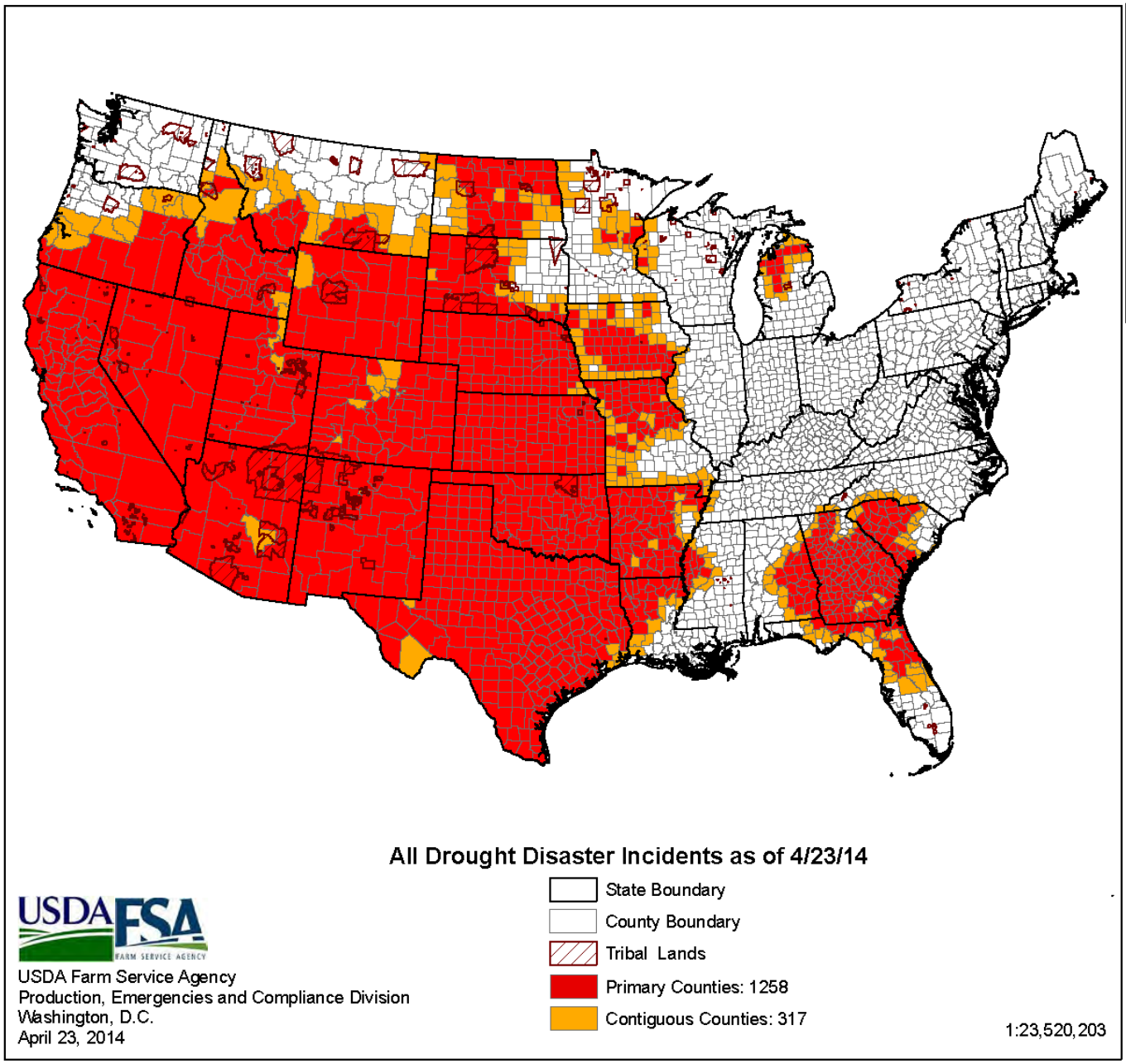
- State Boundary
- County Boundary
- Tribal Lands
- Primary Counties: 2,254
- Contiguous Counties: 374

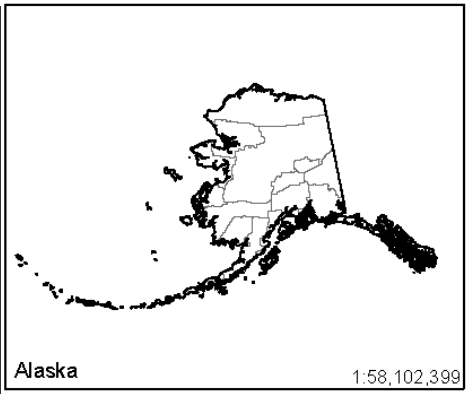
1:23,520,203

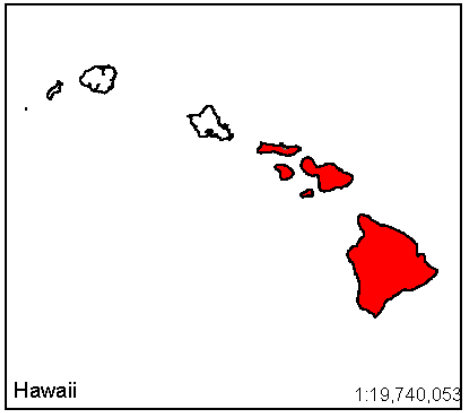
USDA FSA

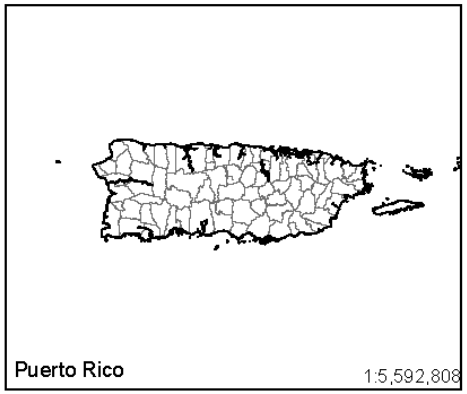
USDA Farm Service Agency
Production, Emergencies and Compliance Division
Washington, D.C.
February 13, 2013

2013 Secretarial Drought Designations - All Drought

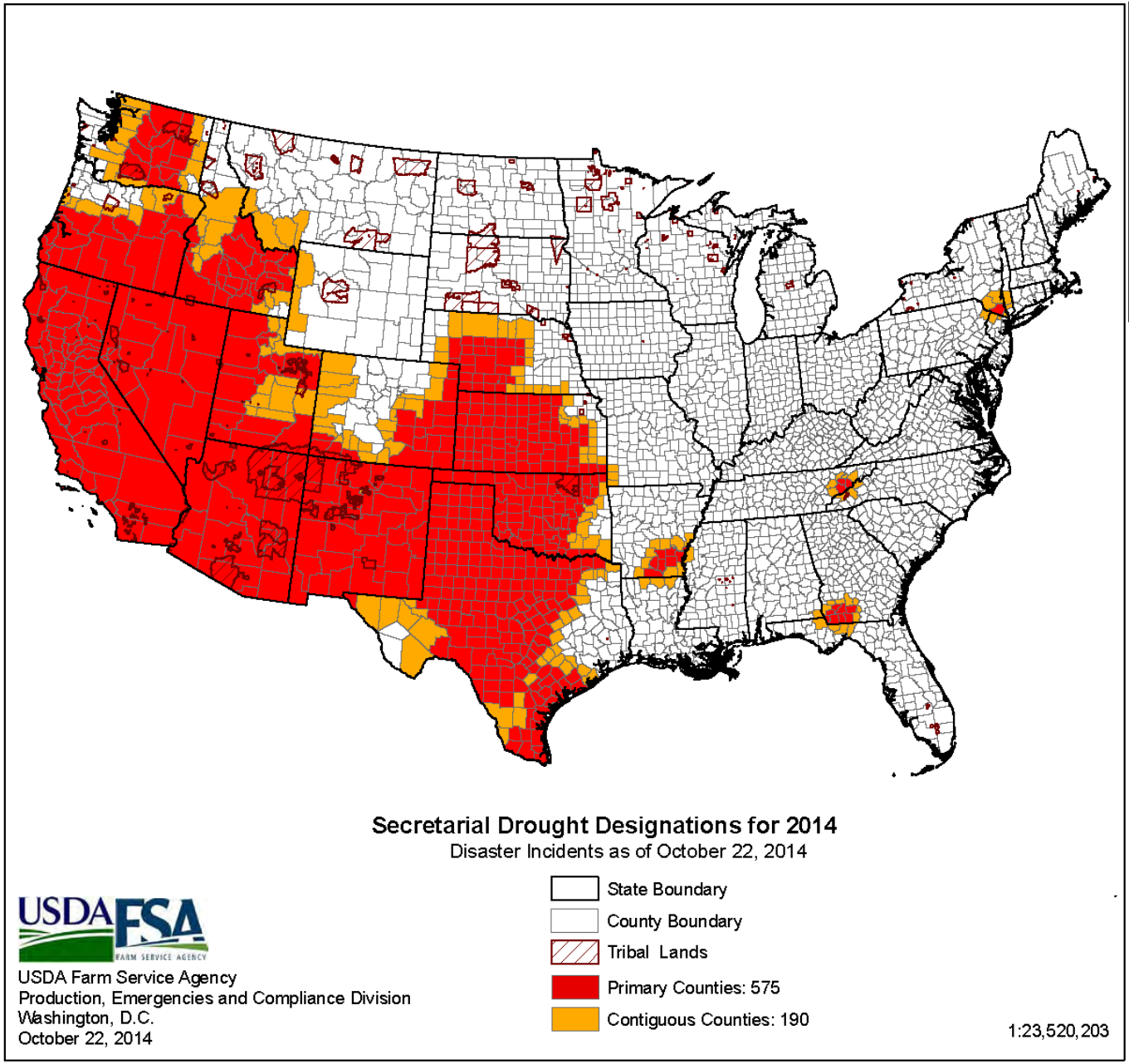


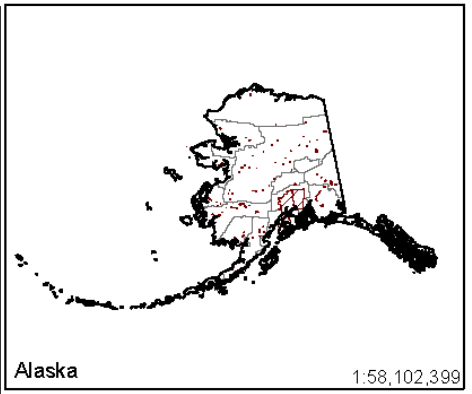


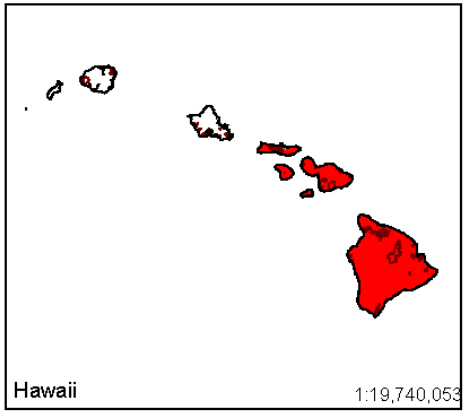


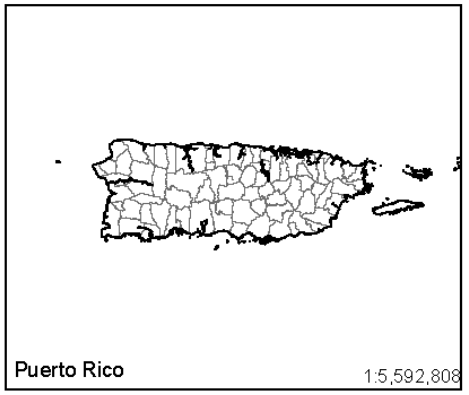


2014 Secretarial Drought Designations - All Drought









USDA FSA FARM SERVICE AGENCY

USDA Farm Service Agency
Production, Emergencies and Compliance Division
Washington, D.C.
October 22, 2014

- **U.S. Drought Monitor Usage by FSA**

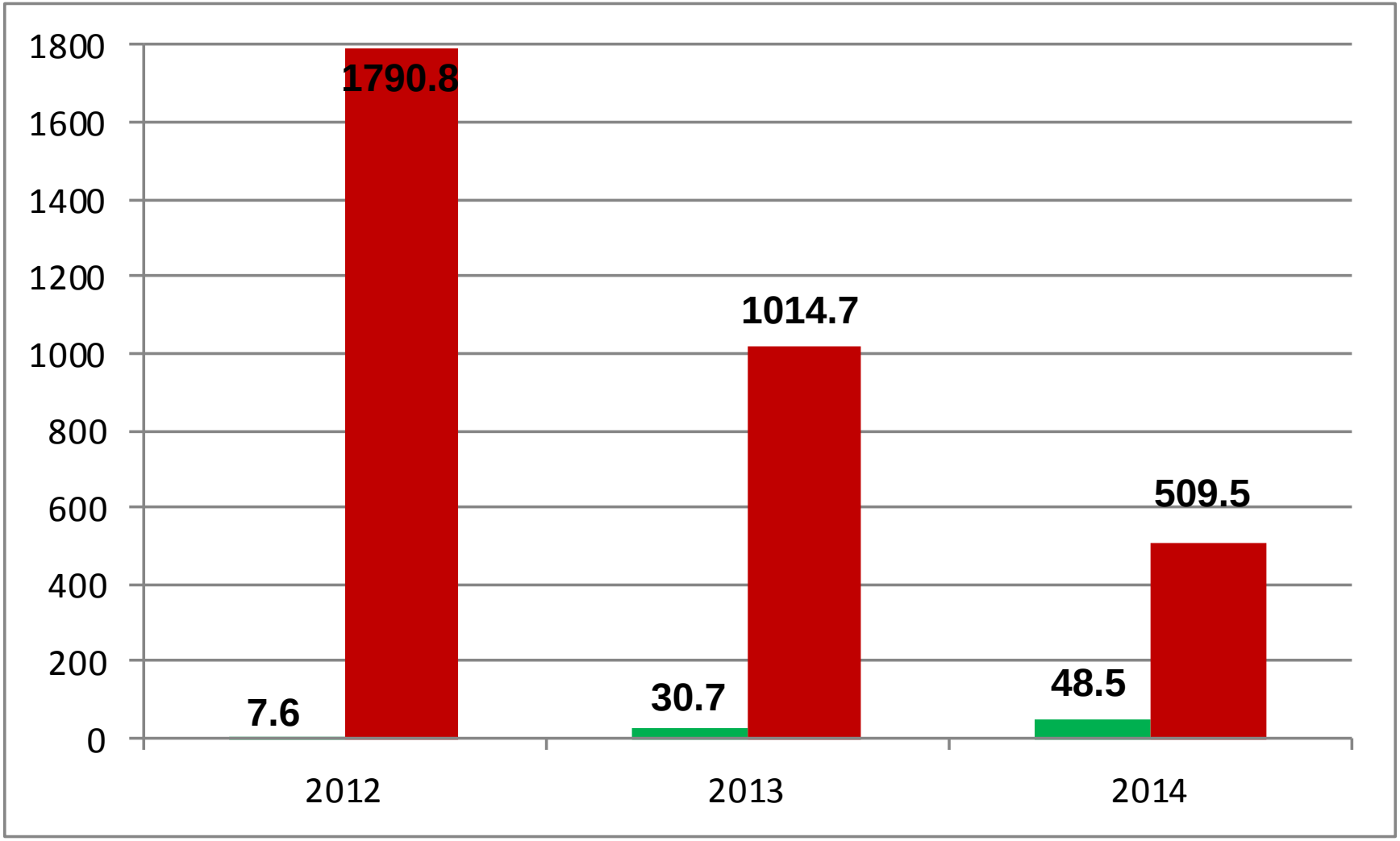
- **Agricultural Act of 2014 (“Farm Bill”) re-authorizes the Livestock Forage Disaster Program (LFP)**
  - **Grazing loss because of drought on owned or leased grazing land or pastureland that is physically located in a county experiencing:**
    - **D2 intensity for at least 8 consecutive weeks during normal grazing period will be eligible to receive an amount equal to 1 monthly payment**
    - **D3 intensity during the normal grazing period will be eligible to receive an amount equal to 3 monthly payments**
    - **D3 intensity for at least 4 weeks or a D4 intensity any time during the grazing period will be eligible to receive an amount equal to 4 monthly payments**
    - **D4 intensity for at least 4 weeks during the normal grazing period will be eligible to receive an amount equal to 5 monthly payments**

Retroactive LFP Payouts

The 2014 Farm Bill contains permanent livestock disaster programs including the Livestock Forage Disaster Program, which will help producers in California and other areas recover from the drought. At President Obama's direction, USDA is making implementation of the disaster programs a top priority and plans to have the programs available for sign up in 60 days. **Producers will be able to sign up for the livestock disaster programs for losses not only for 2014 but for losses they experienced in 2012 and 2013.** While these livestock programs took over a year to get assistance out the door under the last Farm Bill, USDA has committed to cut that time by more than 80 percent and begin sign-up in April. California alone could potentially receive up to $100 million for 2014 losses and up to $50 million for previous years.

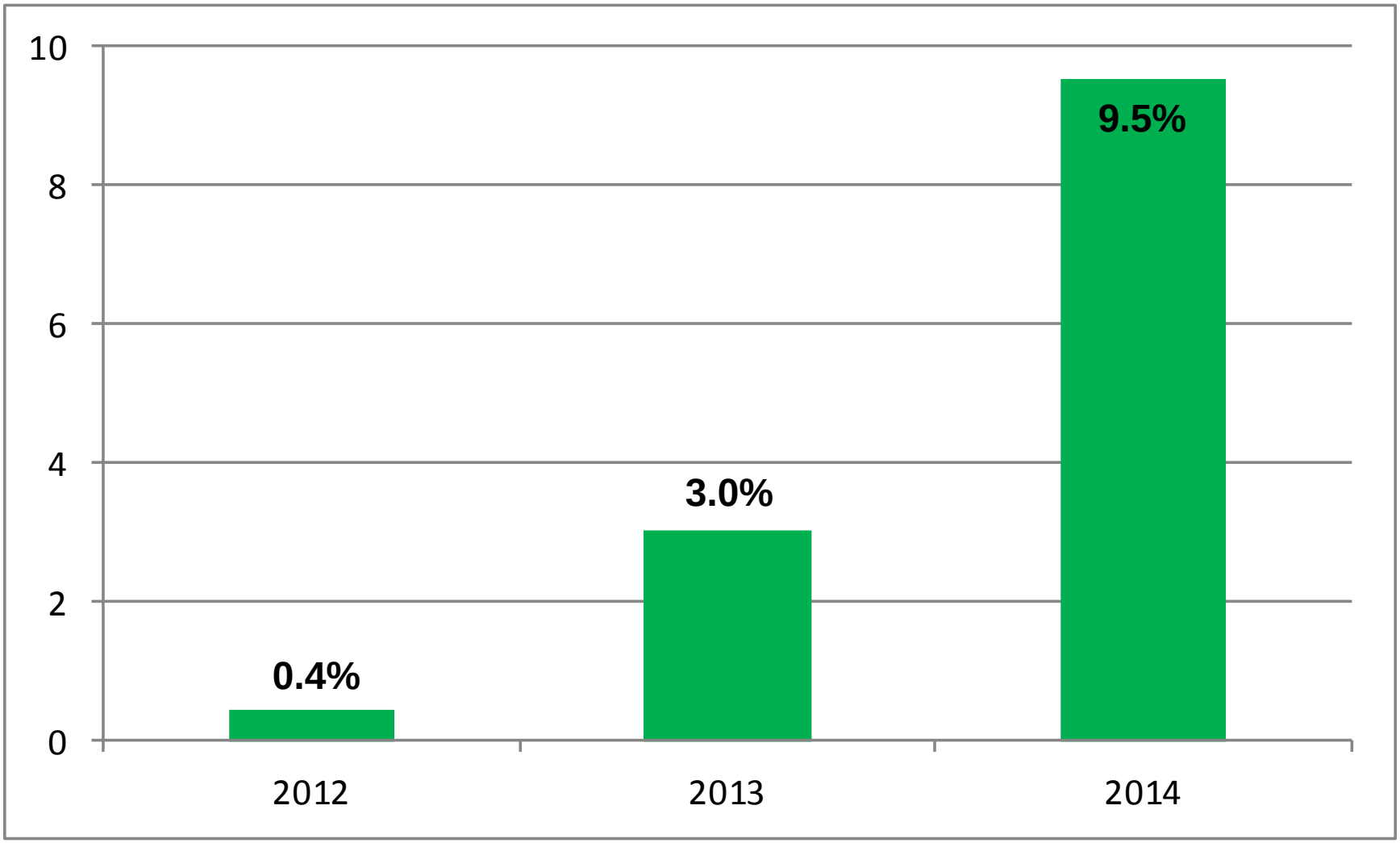
LFP Payouts, 2012-14, U.S. and California

Million Dollars



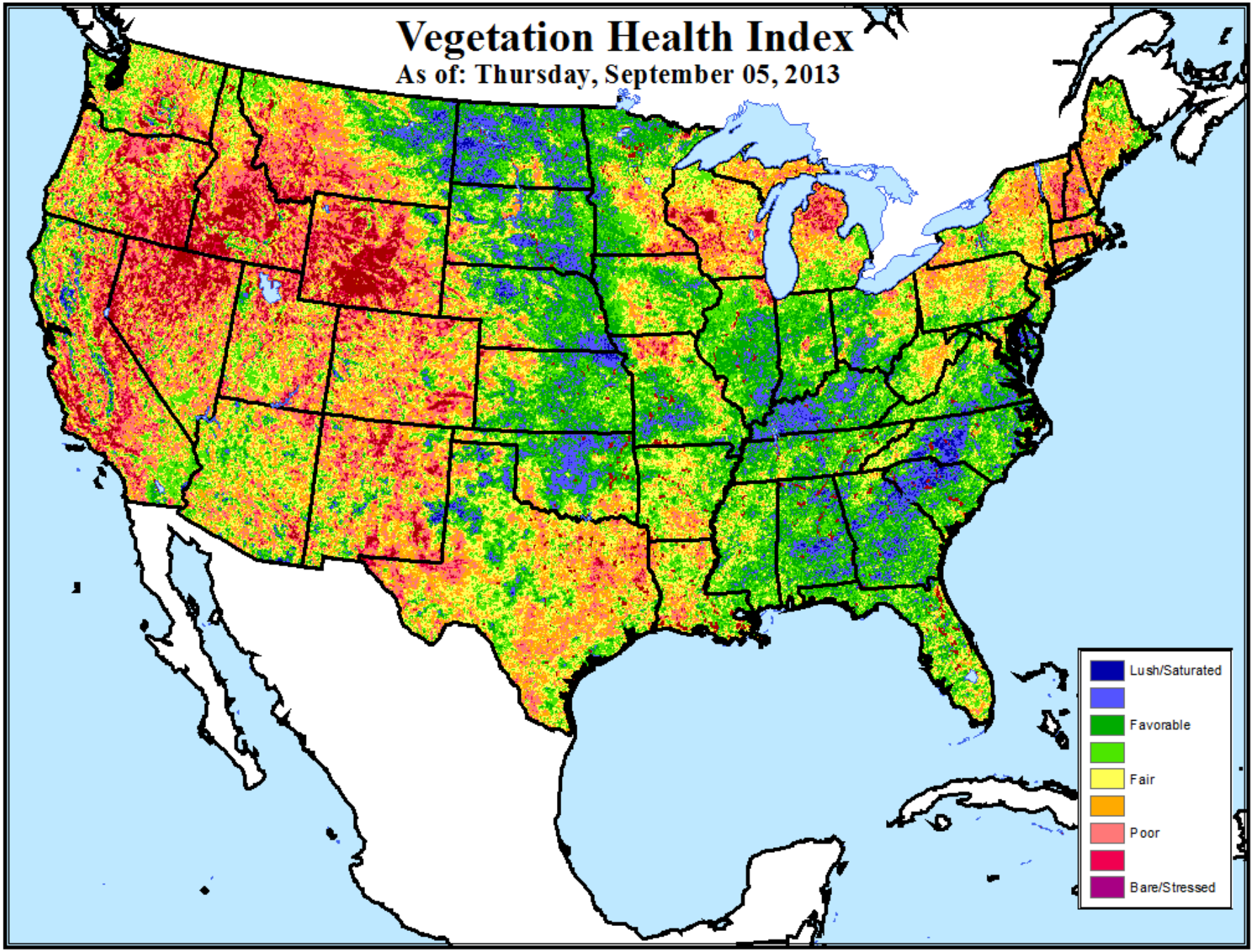
California LFP Payouts, 2012-14

Percent of U.S. Total



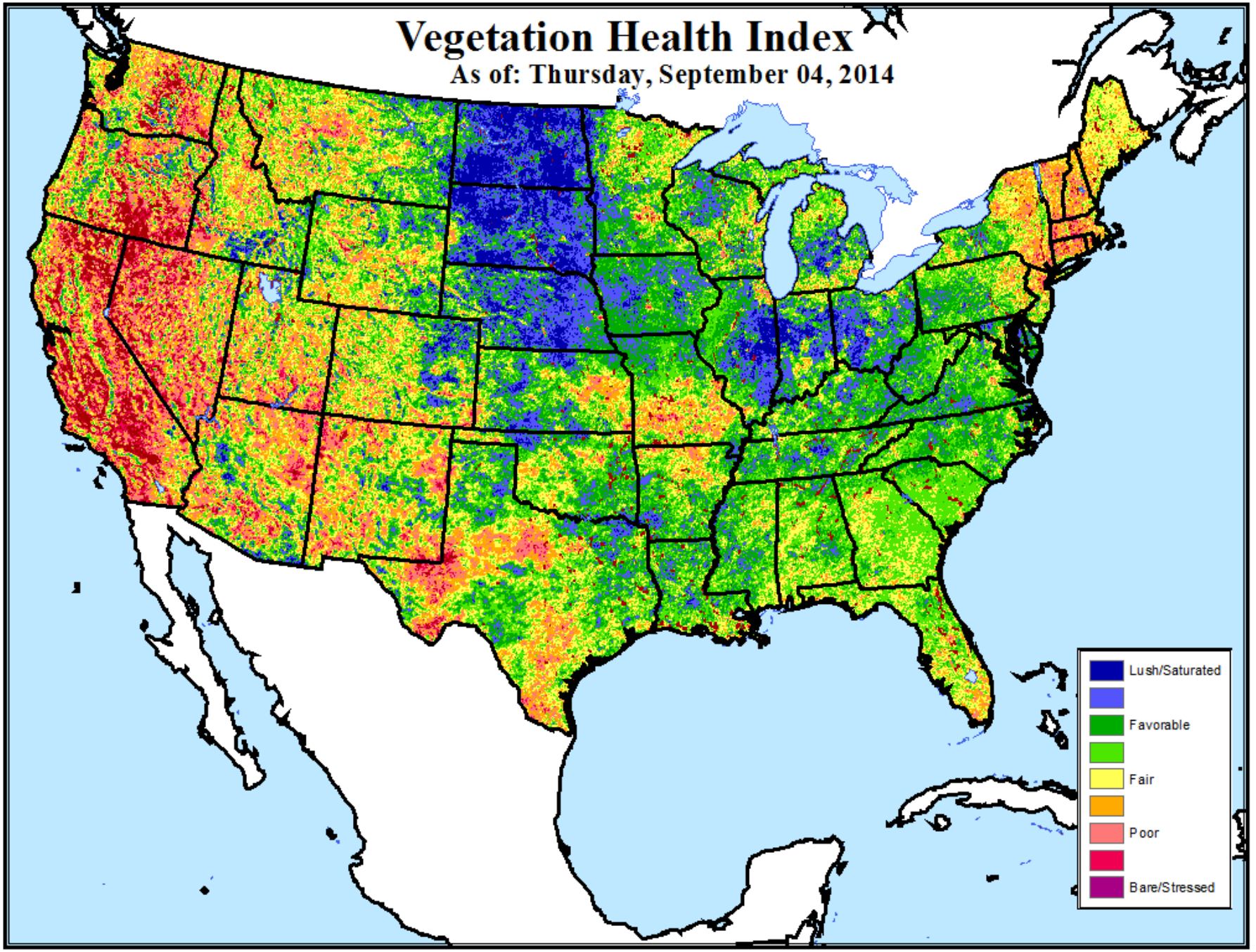
Vegetation Health Index

As of: Thursday, September 05, 2013

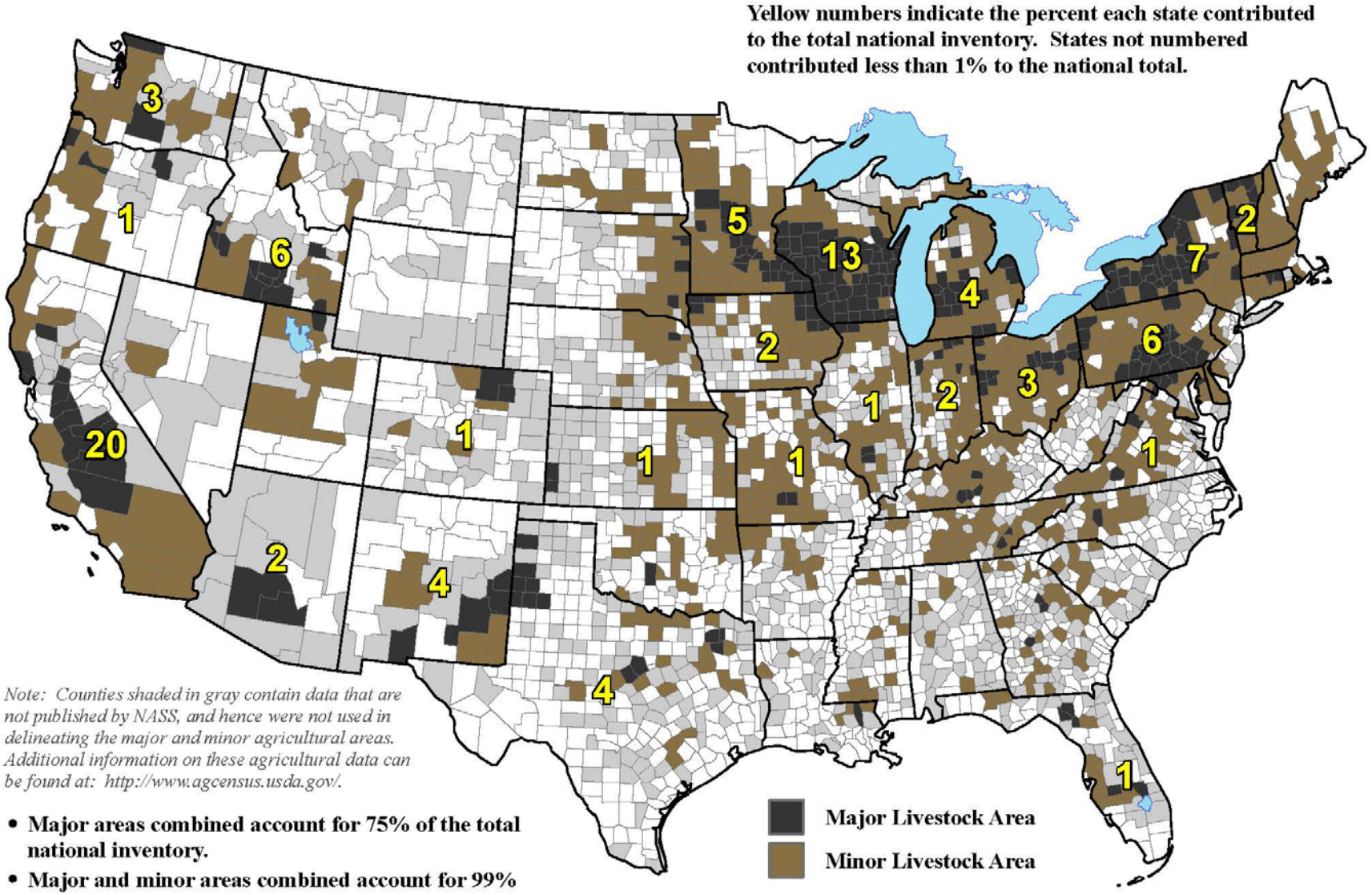


Vegetation Health Index

As of: Thursday, September 04, 2014



United States: Milk Cows

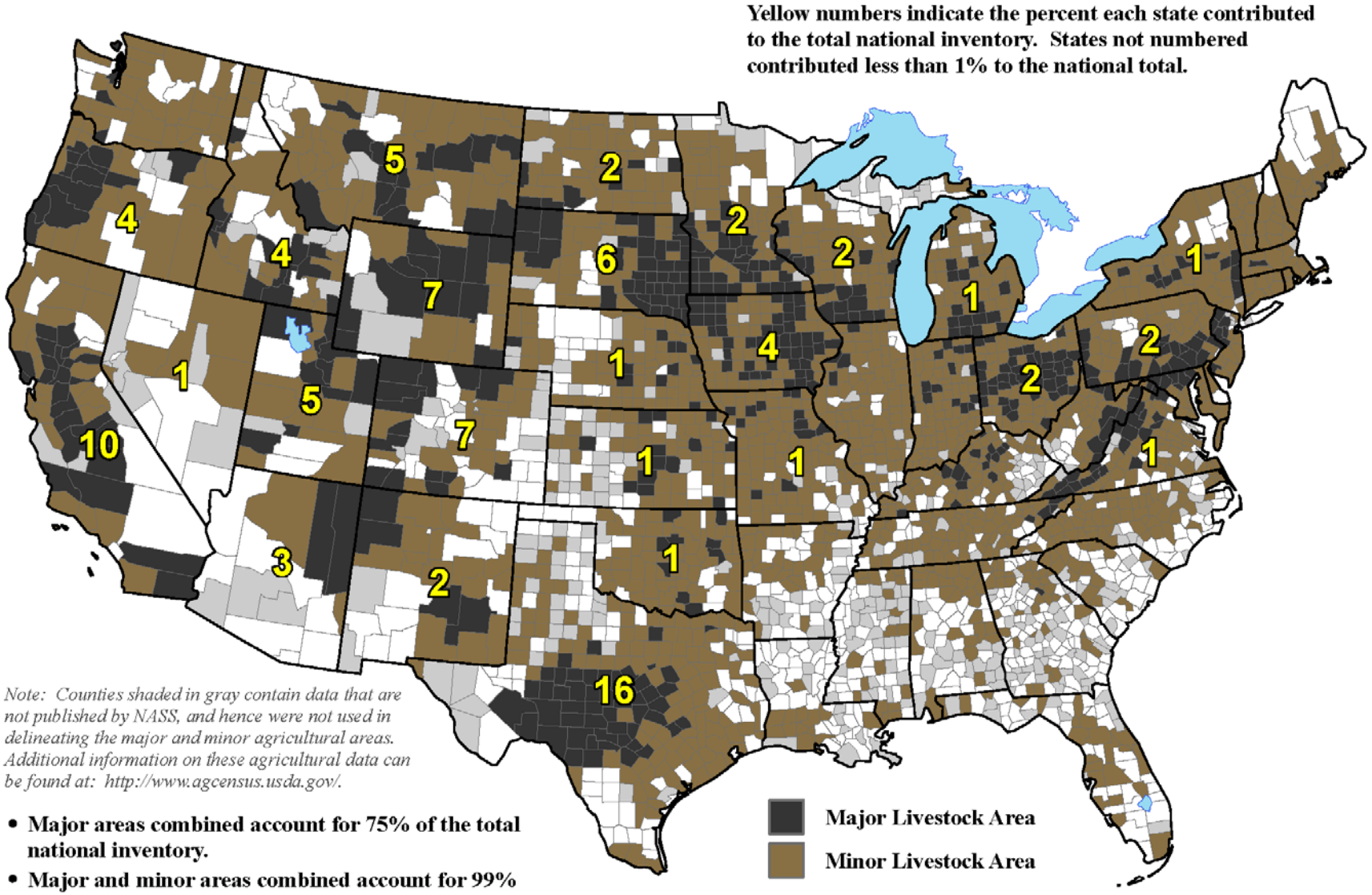


- **Major areas combined account for 75% of the total national inventory.**
- **Major and minor areas combined account for 99% of the total national inventory.**
- **Major and minor areas and state inventory percentages are derived from NASS 2007 Census of Agriculture data.**

USDA World Agricultural Outlook Board
Joint Agricultural Weather Facility

http://www.usda.gov/oce/weather/pubs/Other/MWCACP/index.htm

United States: Sheep & Lambs



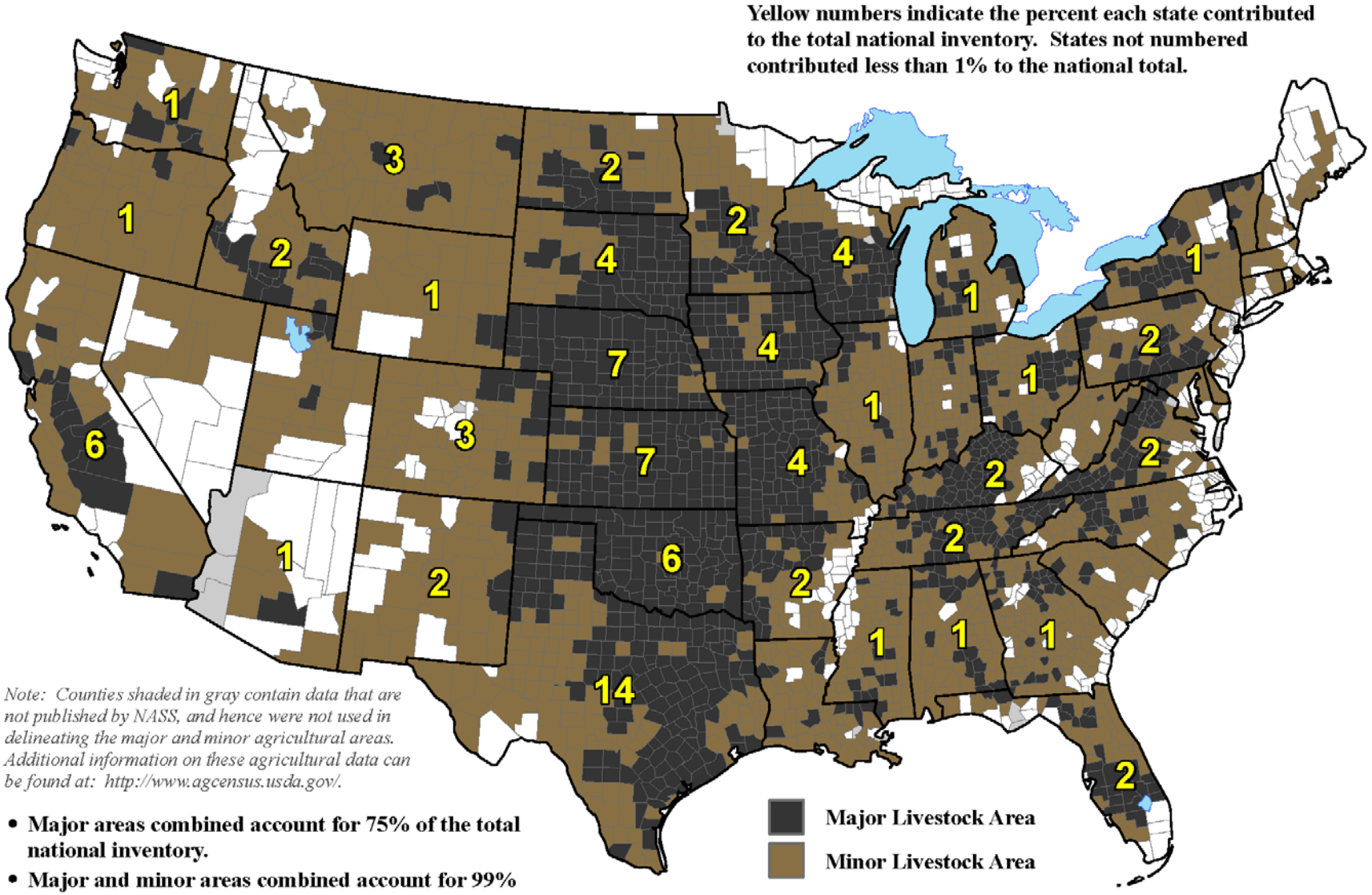
Note: Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.

- **Major areas combined account for 75% of the total national inventory.**
- **Major and minor areas combined account for 99% of the total national inventory.**
- **Major and minor areas and state inventory percentages are derived from NASS 2007 Census of Agriculture data.**

USDA World Agricultural Outlook Board
Joint Agricultural Weather Facility

http://www.usda.gov/oce/weather/pubs/Other/MWCACP/index.htm

United States: Cattle



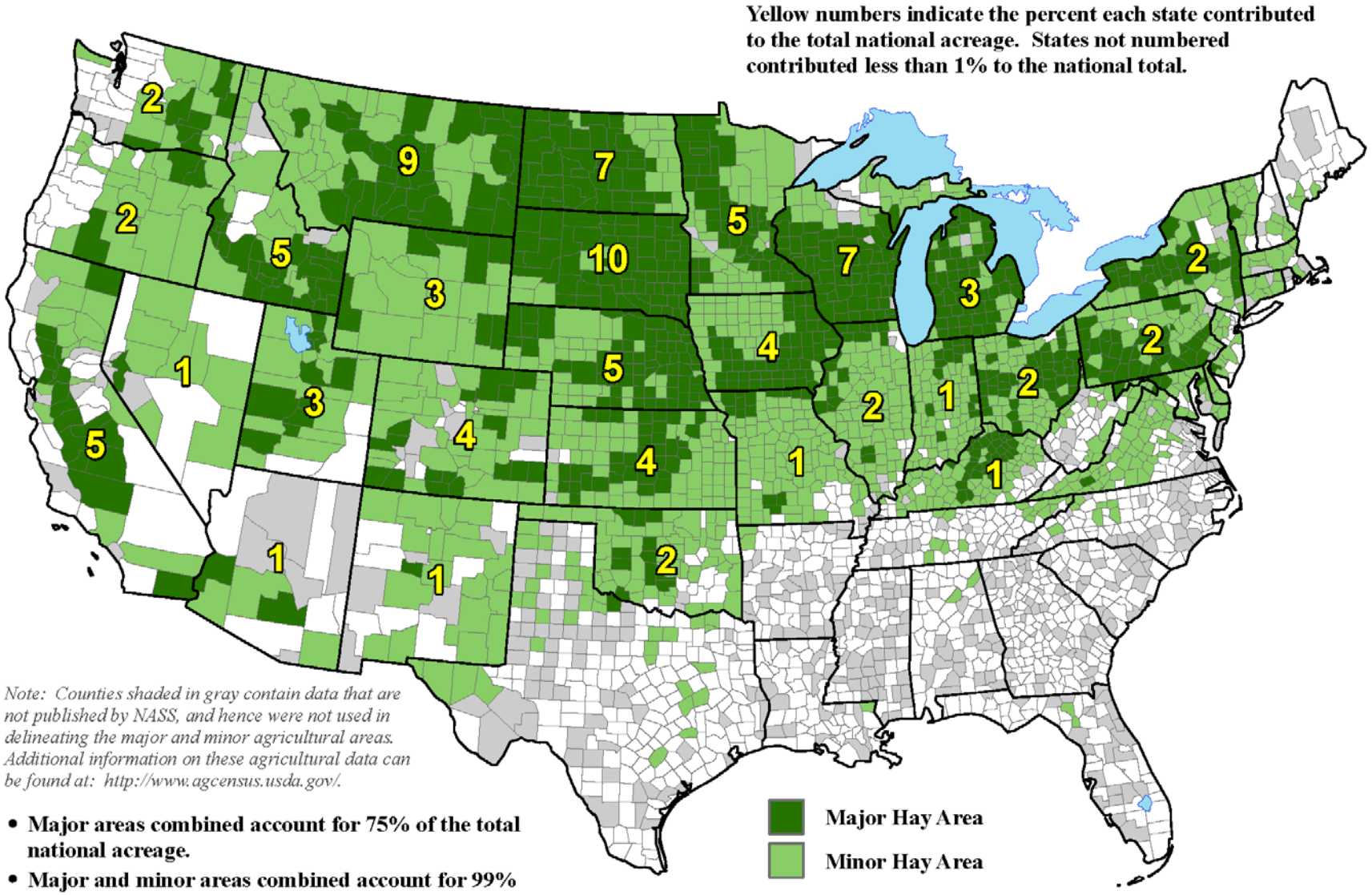
Note: Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.

- **Major areas combined account for 75% of the total national inventory.**
- **Major and minor areas combined account for 99% of the total national inventory.**
- **Major and minor areas and state inventory percentages are derived from NASS 2007 Census of Agriculture data.**

USDA World Agricultural Outlook Board
Joint Agricultural Weather Facility

http://www.usda.gov/oce/weather/pubs/Other/MWCACP/index.htm

United States: Alfalfa Hay



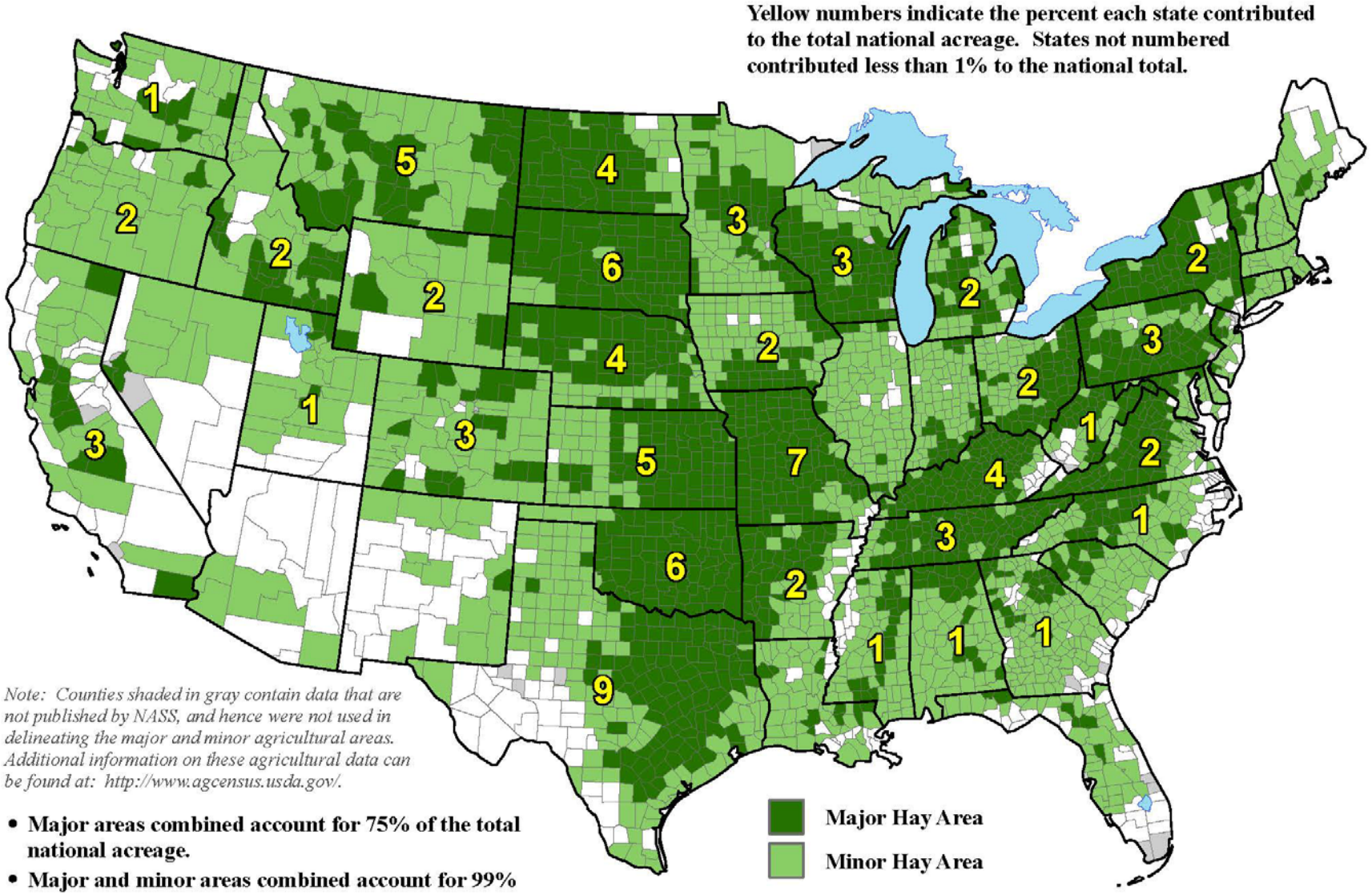
Note: Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.

- **Major areas combined account for 75% of the total national acreage.**
- **Major and minor areas combined account for 99% of the total national acreage.**
- **Major and minor areas and state acreage percentages are derived from NASS 2007 Census of Agriculture data.**

USDA World Agricultural Outlook Board
Joint Agricultural Weather Facility

http://www.usda.gov/oce/weather/pubs/Other/MWCACP/index.htm

United States: Hay



Note: Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.

- **Major areas combined account for 75% of the total national acreage.**
- **Major and minor areas combined account for 99% of the total national acreage.**
- **Major and minor areas and state acreage percentages are derived from NASS 2007 Census of Agriculture data.**

USDA World Agricultural Outlook Board
Joint Agricultural Weather Facility

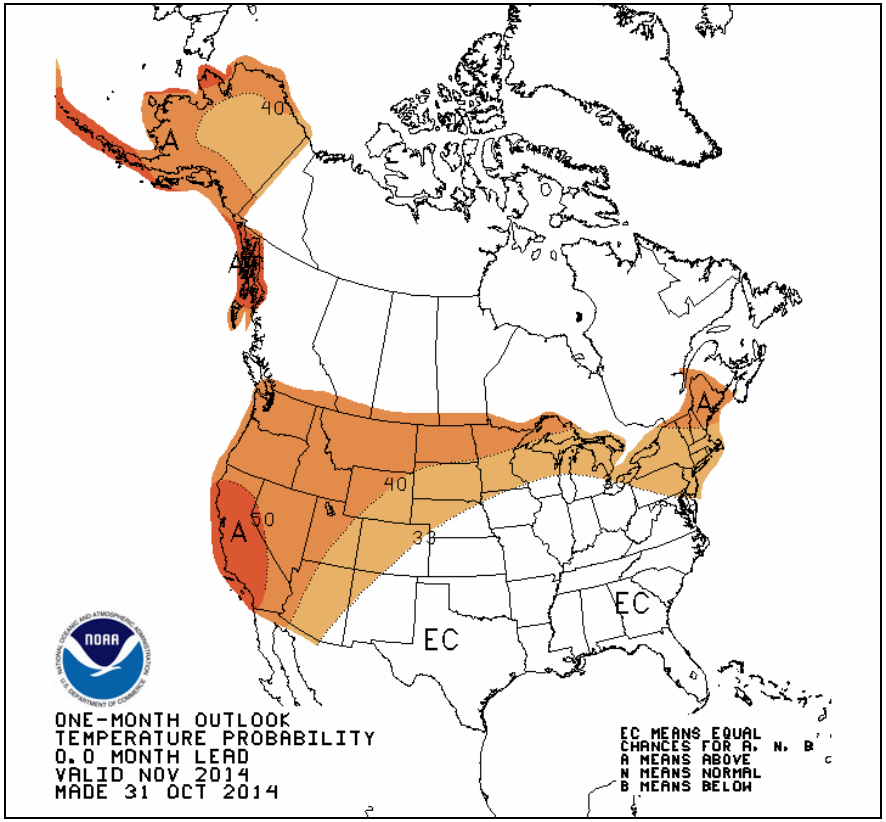
http://www.usda.gov/oce/weather/pubs/Other/MWCACP/index.htm

Thank you!

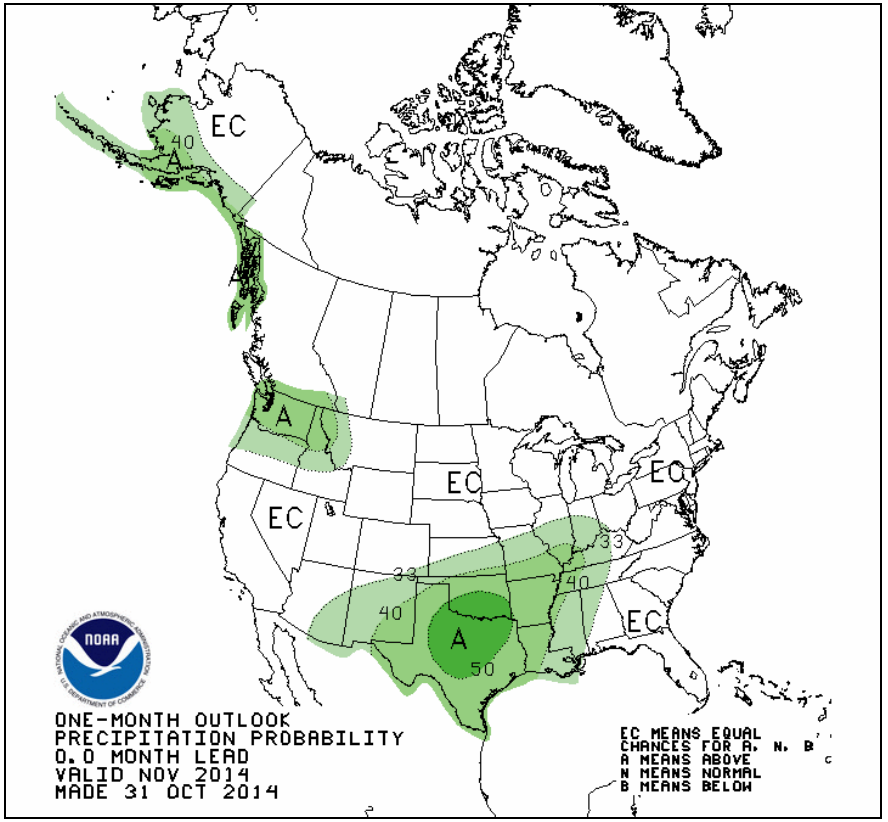
- Contact info

  - e-mail: brippey@oce.usda.gov

  - phone: (202) 720-2397

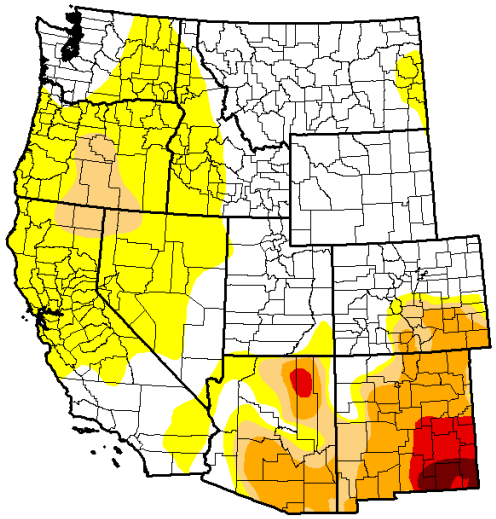


Nov. 2014 Temp Outlook



Nov. 2014 Precip Outlook

U.S. Drought Monitor
West



December 27, 2011
(Released Thursday, Dec. 29, 2011)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.49	51.51	20.05	12.22	2.67	0.78
Last Week 12/20/2011	66.71	33.29	17.00	12.22	4.16	1.82
3 Months Ago 9/27/2011	66.72	33.28	19.04	14.99	9.30	3.81
Start of Calendar Year 1/4/2011	74.72	25.28	11.69	0.89	0.00	0.00
Start of Water Year 9/27/2011	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago 12/28/2010	79.27	20.73	4.91	1.31	0.29	0.00

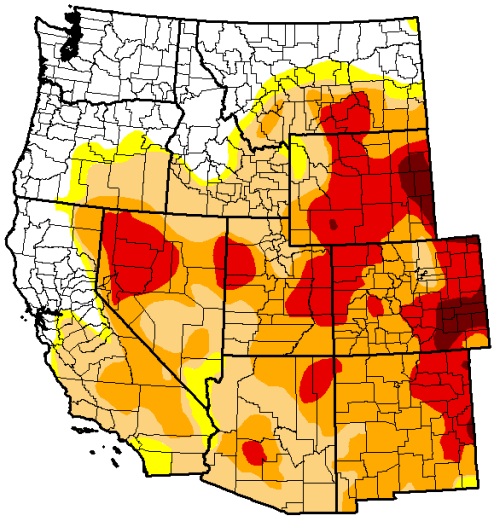
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brad Rippey
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
West



December 25, 2012
(Released Thursday, Dec. 27, 2012)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.28	75.72	69.42	45.80	18.83	2.15
Last Week 12/18/2012	24.28	75.72	69.42	45.92	18.83	2.15
3 Months Ago 9/25/2012	15.12	84.88	77.15	43.65	16.85	1.77
Start of Calendar Year 1/3/2012	50.20	49.80	28.05	11.84	2.67	0.78
Start of Water Year 9/25/2012	15.12	84.88	77.15	43.65	16.85	1.77
One Year Ago 12/27/2011	71.84	28.16	13.42	6.80	0.00	0.00

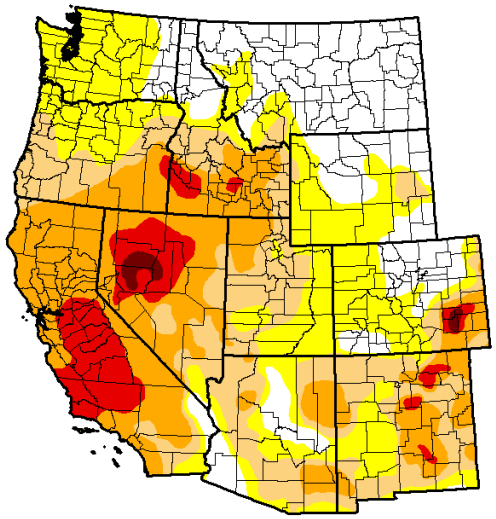
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Heim
NCDC/NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
West



December 31, 2013
(Released Thursday, Jan. 2, 2014)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	22.20	77.80	51.44	31.11	7.75	0.63
Last Week 12/24/2013	22.20	77.80	51.15	30.75	7.62	0.63
3 Months Ago 10/1/2013	25.25	74.75	58.96	34.18	5.57	0.63
Start of Calendar Year 1/1/2013	24.39	75.61	69.31	45.04	18.01	2.15
Start of Water Year 10/1/2013	25.25	74.75	58.96	34.18	5.57	0.63
One Year Ago 1/1/2013	24.39	75.61	69.31	45.04	18.01	2.15

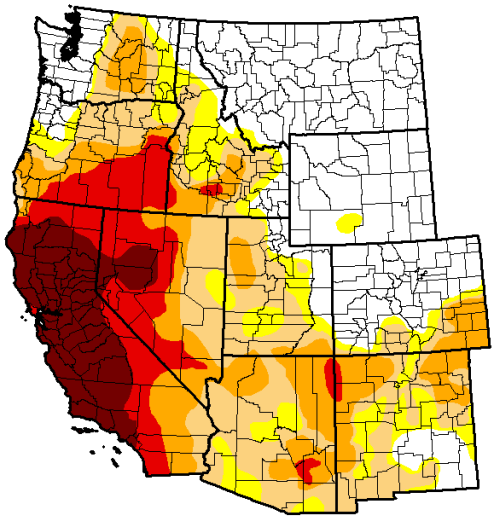
Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Matthew Rosencrans
CPC/NCEP/NWS/NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
West



October 28, 2014
(Released Thursday, Oct. 30, 2014)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.52	65.48	55.05	34.64	19.08	8.90
Last Week 10/21/2014	31.95	68.05	55.56	34.82	19.08	8.90
3 Months Ago 7/29/2014	27.73	72.27	60.93	44.49	21.68	8.98
Start of Calendar Year 12/31/2013	22.20	77.80	51.44	31.11	7.75	0.63
Start of Water Year 9/30/2014	31.48	68.52	55.57	35.65	19.95	8.90
One Year Ago 10/29/2013	27.90	72.10	53.62	32.25	5.34	0.63

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

- **U.S. Drought Monitor Usage by FSA**

- **Food, Conservation, and Energy Act of 2008 (“Farm Bill”) authorizes the Livestock Forage Disaster Program (LFP)**
  - **Grazing loss because of drought on owned or leased grazing land or pastureland that is physically located in a county experiencing:**
    - **D2 intensity for at least 8 consecutive weeks during normal grazing period will be eligible to receive an amount equal to 1 monthly payment**
    - **D3 intensity during the normal grazing period will be eligible to receive an amount equal to 2 monthly payments**
    - **D3 intensity for at least 4 weeks or a D4 intensity any time during the grazing period will be eligible to receive an amount equal to 3 monthly payments**

USDA

- 2008 “Farm Bill” Livestock Forage Disaster Program (LFP) Payouts (financial assistance to producers who suffered grazing losses due to drought or fire on or after January 1, 2008, and before October 1, 2011, during the calendar year in which the loss occurs):
  - 2008 calendar year: $165,540,837
  - 2009 calendar year: $ 98,739,950
  - 2010 calendar year: $ 33,334,458
  - 2011 calendar year: $180,950,088
  - **LFP total, 2008-11: $478,565,333**

USDA