

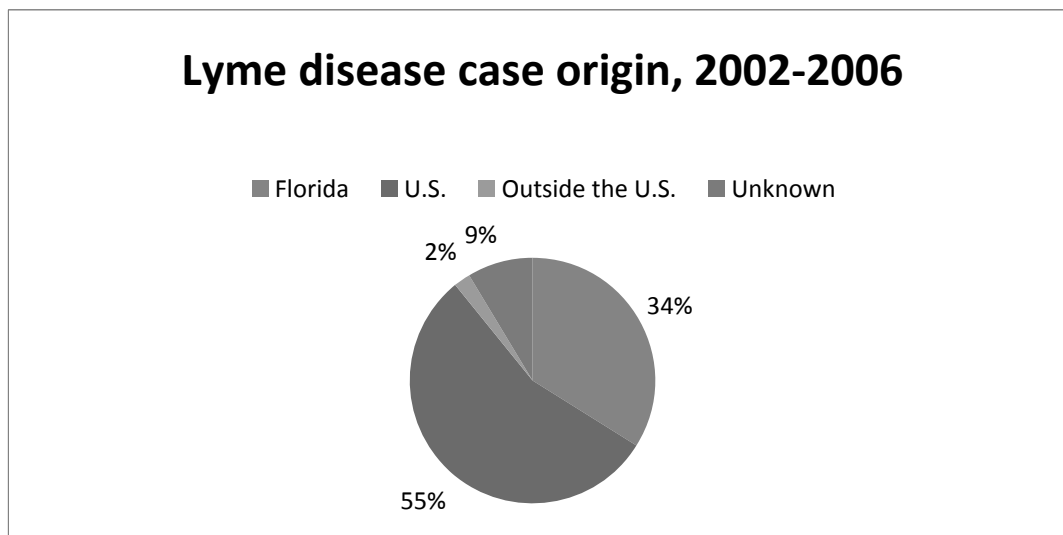
Five-year Summary Report of Tick-borne Disease Surveillance in Florida, 2002-2006

Colleen O'Fallon, MPH candidate, University of Florida; Rebecca Shultz, MPH, Florida Department of Health

Lyme disease

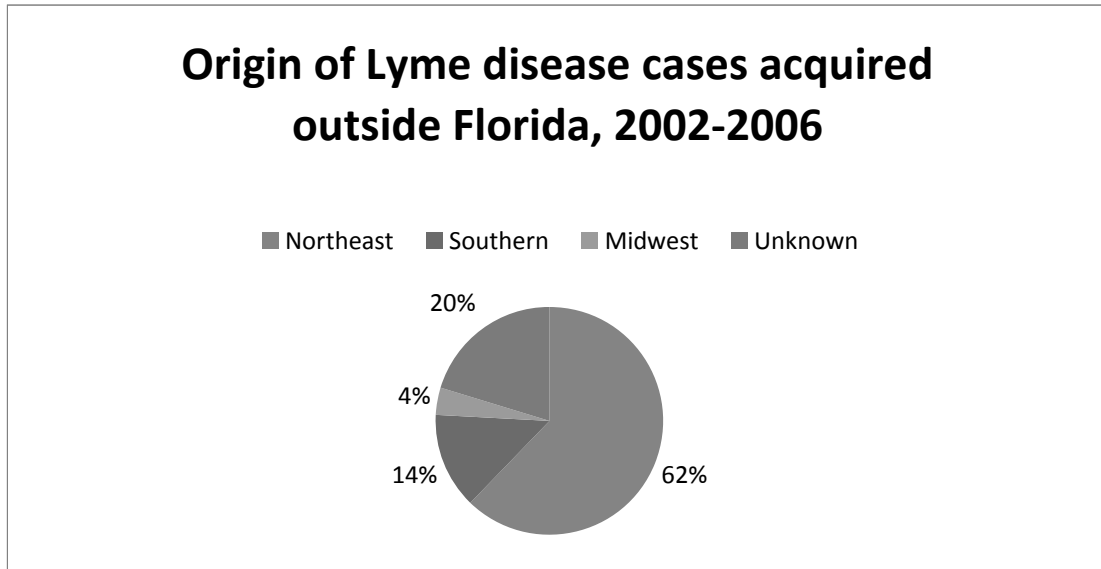
From 2002 to 2006, two hundred and twenty-four cases of Lyme disease were reported in Florida. As Figure 1 shows, 76 cases (33.9%) were acquired in Florida, 124 (55.4%) were acquired in the United States but not in Florida, 5 (2.2%) were acquired outside the United States, and for 19 cases (8.5%) the location where the disease was acquired is unknown.

Figure 1



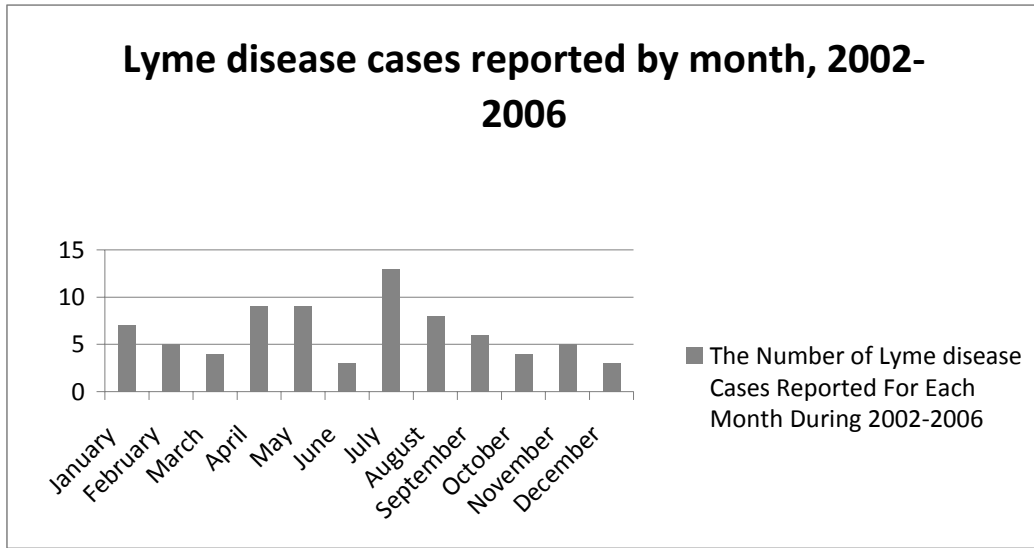
Of the one hundred and twenty-four cases that were acquired in the United States but not in Florida, 77 cases (62.1%) were acquired in the northeast** region of the United States, 17 (13.7%) were acquired in the southern region, 5 (4%) were acquired in the Midwest region, and 25 cases (20.2%) the location where it was acquired in the United States is unknown (Figure 2).

Figure 2



Among the individuals reported as having acquired Lyme disease in Florida (76 cases), 48 (63.2%) were female and 28 (36.8%) were male. The average age was 41.7 years old (range 6-87). Fifty-four cases (71.1%) were white non-Hispanic, for 6 (7.9%) both the race and the ethnicity were unknown, 5 (6.6%) were white but the ethnicity was unknown, 4 (5.3%) were Hispanic with the race unknown, 3 (3.9%) were white Hispanic, 2 (2.6%) were non-Hispanic with unknown race, and 2 (2.6%) were black non-Hispanic. The location of cases varied with 26 (34.2%) residing in the northern region*, 33 (42.4%) residing in the central region, 6 (7.9%) residing in the panhandle region, and 11 (14.5%) residing in the southern region of Florida. All of the cases met the case definition for confirmed Lyme disease. As Figure 3 shows, 13 (17.1%) cases had onset of symptoms in July, 9 (11.8%) each occurred in May and April, 8 (10.6%) occurred in August, 7 (9.2%) occurred in January, 6 (7.9%) occurred during September, 5 (6.6%) each occurred in November and February, 4 (5.3%) each occurred during March and October, and 3 (3.9%) each occurred during June and December.

Figure 3



Among the 76 cases acquired in Florida, 25 (32.9%) were diagnosed as having erythema migrans (EM) of at least 5cm in diameter, 18 (23.7%) did not have EM, for 1 (1.3%) it was unknown, and for 32 (42.1%) it was not specified (Table 1). Twenty-six (34.2%) of the cases reported symptoms of arthritis characterized by brief attacks of joint swelling, 17 (22.4%) did not, for 1 (1.3%) it was unknown, and for 32 (42.1%) it was not specified. Of the cases, 4 (5.3%) experienced Bell’s palsy or other cranial neuritis, 38 (50%) did not, for 1 (1.3%) it was unknown, and for 33 (43.4%) it was not specified. Four (5.3%) cases were diagnosed with radiculoneuropathy, 38 (50%) were not, for 32 (42.1%) it was not specified, and for 2 cases it was unknown if symptoms were experienced. For lymphocytic meningitis, 41 (54%) did not experience these symptoms, for 2 (2.6%) it was unknown, and for 33 (43.4%) it was not specified. One case was diagnosed with encephalitis/encephalomyelitis, 41 (54%) individuals were not, for 1 (1.3%) it was unknown, and for 33 (43.4%) it was not specified. In thirty-eight (50%) of the cases there was no 2nd or 3rd degree atrioventricular block, in 1 case it was diagnosed, in 5 (6.6%) cases it was unknown, and in 32 (42.1%) cases it was not specified.

Table 1.

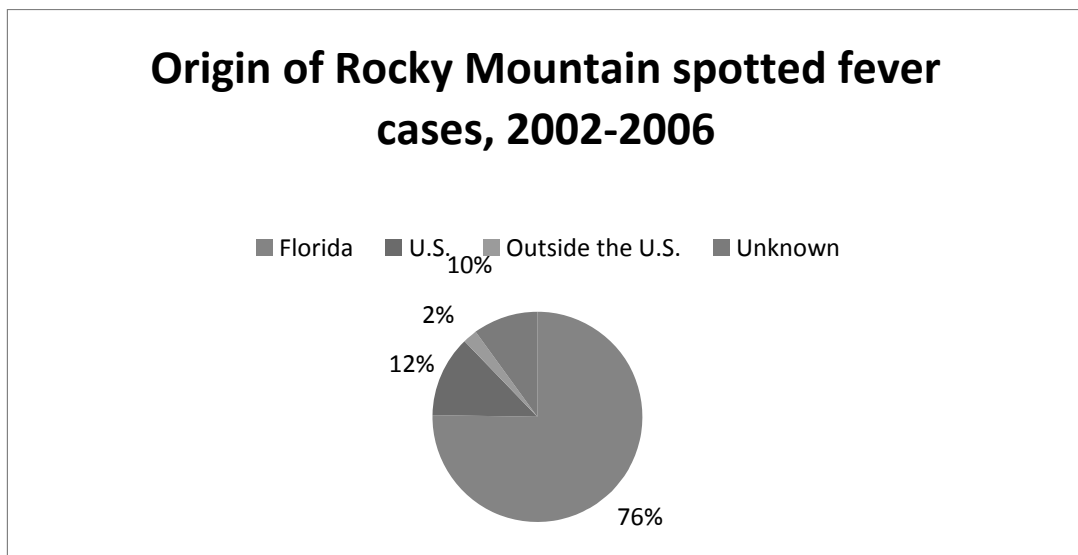
Symptom	Present	Not present	Unknown	Not specified
Erythema Migrans	25 (32.9%)	18 (23.7%)	1 (1.3%)	32 (42.1%)
Arthritis	26 (34.2%)	17 (22.4%)	1 (1.3%)	32 (42.1%)
Bell’s Palsy or other cranial neuritis	4 (5.3%)	38 (50%)	1 (1.3%)	33 (43.4%)
Radiculoneuropathy	4 (5.3%)	38 (50%)	2 (2.6%)	32 (42.1%)
Lymphocytic meningitis	0	41 (54%)	2 (2.6%)	33 (43.4%)
Encephalitis/encephalomyelitis	1 (1.3%)	41 (54%)	1 (1.3%)	33 (43.4%)
2nd or 3rd atrioventricular block	1 (1.3%)	38 (50%)	5 (6.6%)	32 (42.1%)

In general, Lyme disease cases reported in Florida were acquired outside of Florida but in the United States. Of the cases acquired in Florida, there was a higher percentage of females, and white non-Hispanic individuals. The average age of the cases acquired in Florida was 41.7 years old. The raw number of cases and the incidence rate per 100,000 population were largest in the central region of the state (Figure 7). Also, the Lyme disease case numbers peak in July when individuals may be active outside.

Rocky Mountain spotted fever

From 2002-2006, eighty-nine cases of Rocky Mountain spotted fever (RMSF) were reported in Florida. As Figure 4 shows, 67 (75.3%) were acquired in Florida, 11 (12.4%) was acquired in the United States but not in Florida, 2 (2.2%) were acquired outside the United States, and for 9 cases (10.1%) the location of where the disease was acquired is unknown.

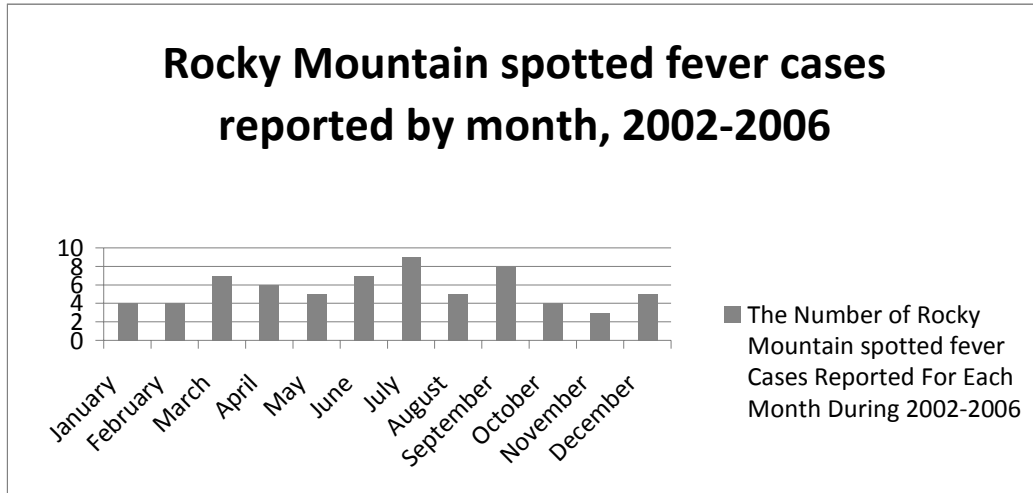
Figure 4



Of the sixty-seven cases acquired in Florida from 2002-2006, 23 (34.3%) were female and 44 (66.7%) were male. The average age was 42.1 years of age (range 6-81). Thirty-five cases (52.2%) were white non-Hispanic, 4 (6%) were white with Hispanic ethnicity, for 3 (4.5%) the race was unknown but the ethnicity was Hispanic, for 11 (16.4%) both race and ethnicity were unknown, 9 (13.4%) were white with ethnicity unknown, 3 (4.5%) were Black non-Hispanic, 1 (1.5%) was black with unknown ethnicity, and for one case (1.5%) the race was other and the ethnicity was Hispanic. Thirty-five cases (52.2%) resided in the northern region*, 17 (25.4%) of the individuals resided in the panhandle region, 12 (17.9%) resided in the central region, and 3 (4.5%) resided in the southern region of Florida. Over half (71.6%), of the cases met the case definition for probable RMSF while 19 (28.4%) of the cases met the case definition for confirmed RMSF. As Figure 5 shows, 9 (13.4%) cases had an onset of symptoms in July, 8 (11.9%) occurred in September, 7 (10.4%) each occurred in March and June, 6 (8.9%) occurred in

April, 5 (7.5%) each occurred in May, August, and December, 4 (6%) each occurred in January, February, and October, and 3 (4.5%) occurred in November.

Figure 5

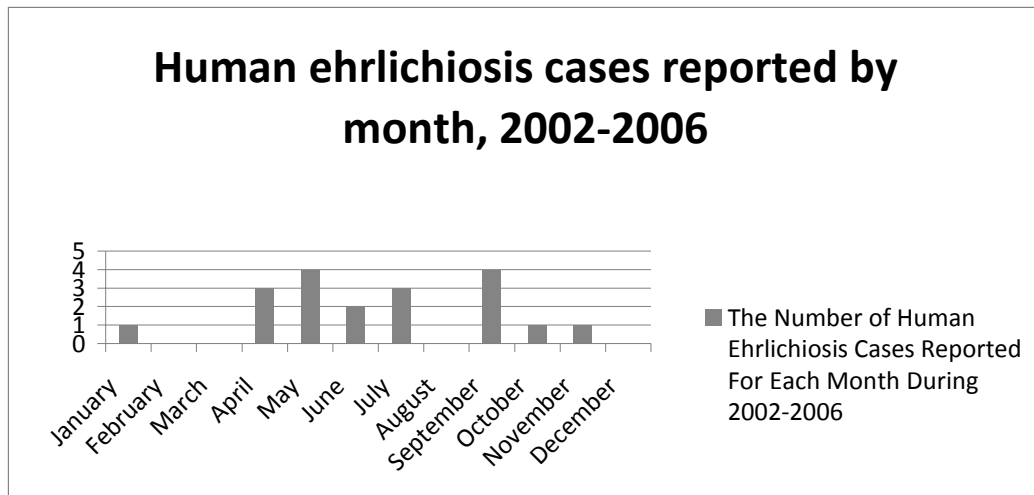


In general, Rocky Mountain spotted fever cases reported in Florida were acquired locally. Of the cases acquired in Florida, white, non-Hispanic males were more likely to acquired the disease. The average age of the cases acquired in Florida was 42.1 years old. The northern region had a higher number of cases that were acquired locally, but the incidence rates per 100,000 population were larger in the panhandle region (Figure 7). Also Rocky Mountain spotted fever cases peak in July but don't have a strong seasonality, with cases occurring year round.

Human Monocytic Ehrlichiosis

From 2002-2006, twenty-six cases of Human Monocytic Ehrlichiosis (HME) were reported in Florida with a majority (73.1%), acquired in Florida. Five, (19.2%) were acquired in the United States but not in Florida, and for two (7.7%) cases the location where the disease was acquired is unknown. Of the nineteen cases acquired in Florida, 10 (52.6%) were male, 8 (42.1%) were female, and for one (5.3%) the gender was unknown. The average age was 55 years old (range 20-76). Twelve (63.1%) of the individuals were white non-Hispanic, 3 (15.8%) were white with the ethnicity being unknown, for 2 (10.5%) both race and ethnicity were unknown, one was black non-Hispanic, and one was American Indian/Alaskan Native and non-Hispanic. Ten cases (52.6%) resided in the northern region*, 5 (26.4%) resided in the panhandle region, and 4 (21%) resided in the central region of Florida. Nineteen cases (73.1%), met the case definition for probable HME and 7 (26.9%) met the case definition for confirmed HME. As Figure 6 shows, 4 (21%) cases each had an onset of symptoms that occurred in May and September, 3 (15.8%) each occurred in April and July, 2 (10.5%) occurred in June, and 1 (5.3%) case occurred in each January, October, and November.

Figure 6



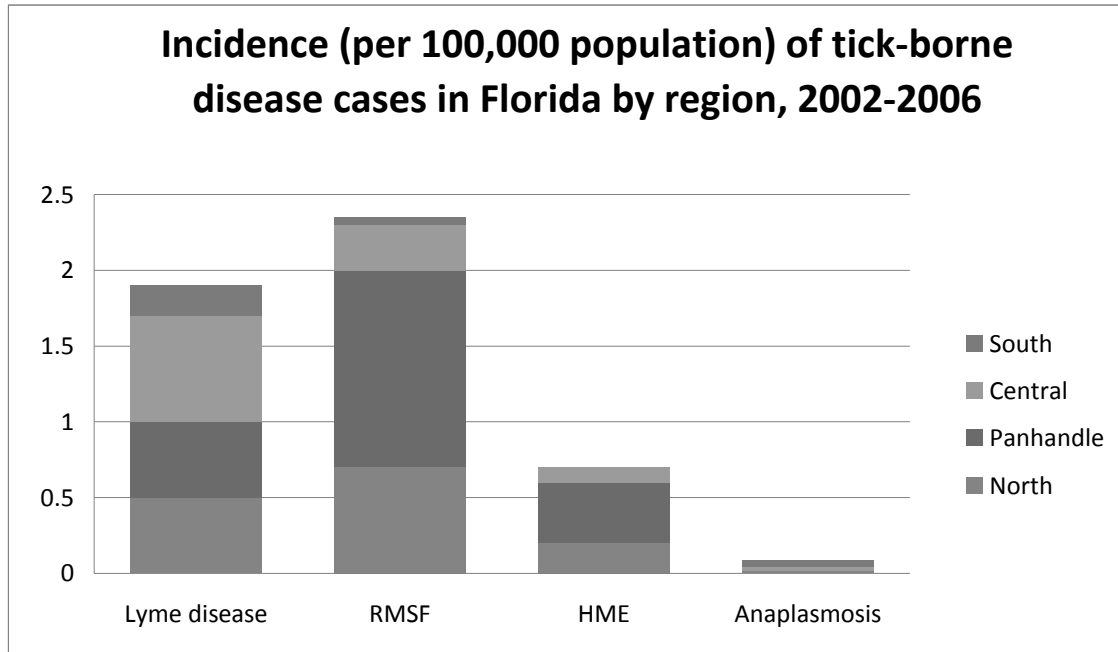
In general, Human Monocytic Ehrlichiosis cases reported in Florida were acquired locally. Of the cases acquired in Florida, white, non-Hispanic males were more likely to be reported with the disease. The average age of the cases acquired in Florida was 55 years old showing that more late middle aged people acquire HME. The largest number of locally-acquired cases reported residing in the northern region of the state, but the incidence rates per 100,000 population were larger in the panhandle region (Figure 7). Also HME cases peak in late spring and summer when more people are active outdoors.

Anaplasmosis

From 2002-2006, eleven cases of Anaplasmosis (formerly Human Granulocytic Ehrlichiosis) were reported in Florida. Of those cases, 5 (45.4%) were acquired in Florida, 4 (36.4%) were acquired in the United States but not in Florida, 1 (9.1%) was acquired outside the United States, and the remaining case the location where the disease was acquired is unknown. Of the five cases acquired in Florida, 2 (40%) were female and 3 (60%) were male. The average age of individuals was 51.6 years old (range 35-81). Two individuals (40%) were black and non-Hispanic, 2 (40%) were white and non-Hispanic, and the remaining case was white and Hispanic. Three (60%) cases resided in the southern region*, 1 (20%) resided in each of the following regions of Florida: northern and central. Three cases met the case definition for confirmed Anaplasmosis and 2 (40%) met the case definition for probable Anaplasmosis. Three cases had an onset of symptoms that occurred in May and 1 (20%) each occurred in June and October.

Of the cases acquired in Florida, a slightly higher percentage were male than female. There were an equal number of cases among black non-Hispanic and white non-Hispanic individuals. The average age of the cases acquired in Florida was 51.6 years old showing that more middle aged individuals acquire the disease. The southern region had a higher number of cases that were acquired locally and the larger incidence rates per 100,000 population (Figure 7). Also anaplasmosis cases appear to peak in May when individuals may be more active outdoors.

Figure 7



Of all tick-borne disease cases acquired in Florida there was a higher frequency of: males, white non-Hispanic, and individuals that resided in the northern region. For tick-borne disease cases the average age was 47.6 years old (range 6-87). An increase in the number of cases occurred during the summer for all tick-borne diseases when more individuals are active outdoors.

*For the purpose of this analysis, Florida counties were divided into regions as follows:

North- Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Lafayette, Lake, Levy, Madison, Marion, Nassau, Orange, Pasco, Putnam, Seminole, St. Johns, Sumter, Suwannee, Taylor, Union, Volusia.

Central- Brevard, DeSoto, Hardee, Highlands, Hillsborough, Indian River, Manatee, Okeechobee, Osceola, Pinellas, Polk, Sarasota, St. Lucie.

South- Broward, Charlotte, Collier, Glades, Hendry, Lee, Martin, Miami-Dade, Monroe, Palm Beach.

Panhandle- Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington.

**For the purpose of this analysis, the United States was divided into regions as follows:

Northeast- Pennsylvania, New York, New Jersey, Connecticut, Rhode Island, New Hampshire, and Maine.

Midwest- North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Ohio, and Michigan.

South- Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Tennessee, Kentucky, West Virginia, Maryland, Delaware, Virginia, North Carolina, South Carolina, Georgia, and Florida.

West- Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, Arizona, New Mexico, Hawaii, and Alaska.