

# NAPPC National Beekeeper Forage Survey

North American Pollinator Partnership  
Forage, Roadsides & Nutrition Task Force

## NATIONAL BEEKEEPER SURVEY OF THE FORAGING NEEDS OF BEE COLONIES

# NAPPC National Beekeeper Forage Survey

The North American Pollinator Partnership Campaign, NAPPC, is a collaborative body of more than 160 diverse partners, including respected scientists, researchers, conservationists, government officials and dedicated volunteers.

The Forage, Nutrition & Roadsides Task Force is a working group of NAPPC partners tasked with supporting the development of increased acres of bee forage in key regions, working to increase access to existing potential forage for beekeepers and developing guidelines for regional seed mixes that can be used by Departments/Ministries of Transportation to effectively promote key pollinators along roadsides.

To better understand the amount of forage land needed for managed bee colonies in non-pollination settings, the Forage, Nutrition & Roadsides Task Force conducted a survey of U.S. beekeepers between October 2015 and February 2016. Beekeepers are highly knowledgeable about forage needs in their specific locations, as they are intimately familiar with the health of their colonies, the success of breeding, the amount of excess honey produced and whether supplemental feeding is required at the location. The survey asked beekeepers to consider forage needs at a specific location rather than the beekeeper's general view of forage needs in order to obtain the most accurate information possible. The survey also asked about forage needs during winter and summer (January and July) to reflect differences in available forage.

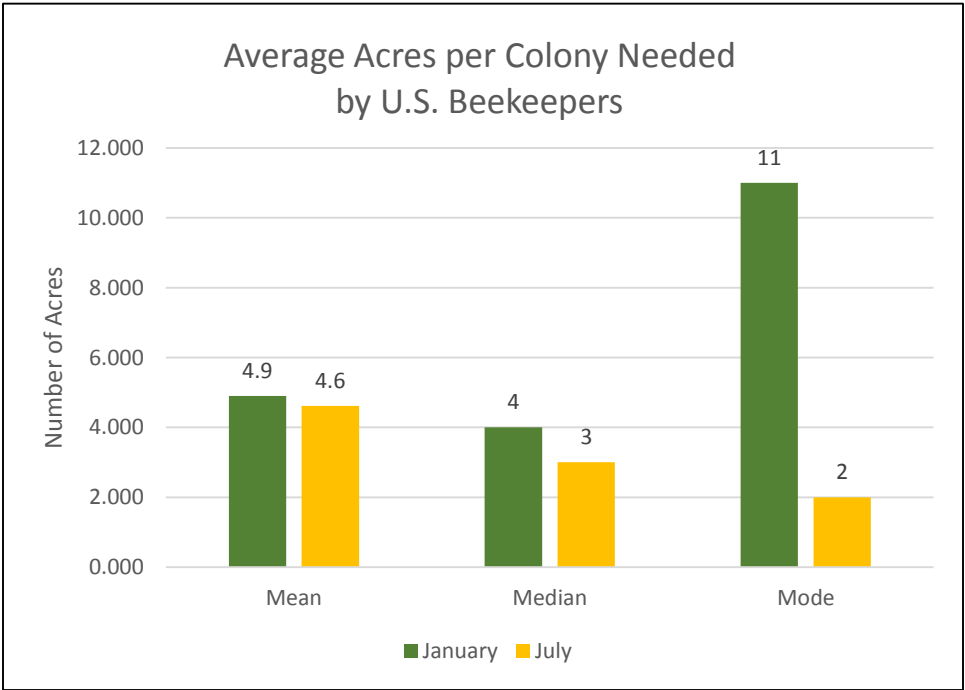
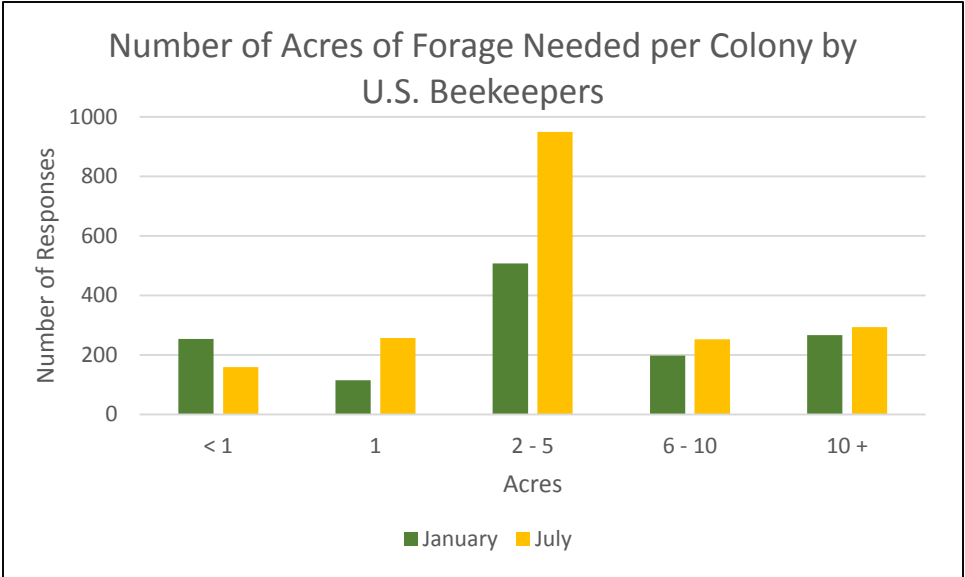
2,250 beekeepers from 30+ states responded to the survey. Most beekeepers responded that they need 2-5 acres of forage land per colony at their southernmost yard in both winter and summer. In every state, the vast majority of beekeepers responded that they need at least 1 acre of forage per colony, with 100% of beekeepers so responding in some states. Nationally, 92% of beekeepers responded that they need at least 1 acre of forage per colony in summer.

The beekeepers were asked about the types of ecosystems upon which their managed colonies were foraging. The types of habitats were diverse, ranging from forest land to pasture land to commercial and residential properties. Additionally, there was a wide diversity in the plants used as the primary foraging source. Despite the diversity in habitats and primary forage sources, however, the average number of acres needed fell within the range of 4.2 to 6.1 acres per colony. Bees can apparently survive in many diverse habitats so long as they have sufficient foraging resources to do so.

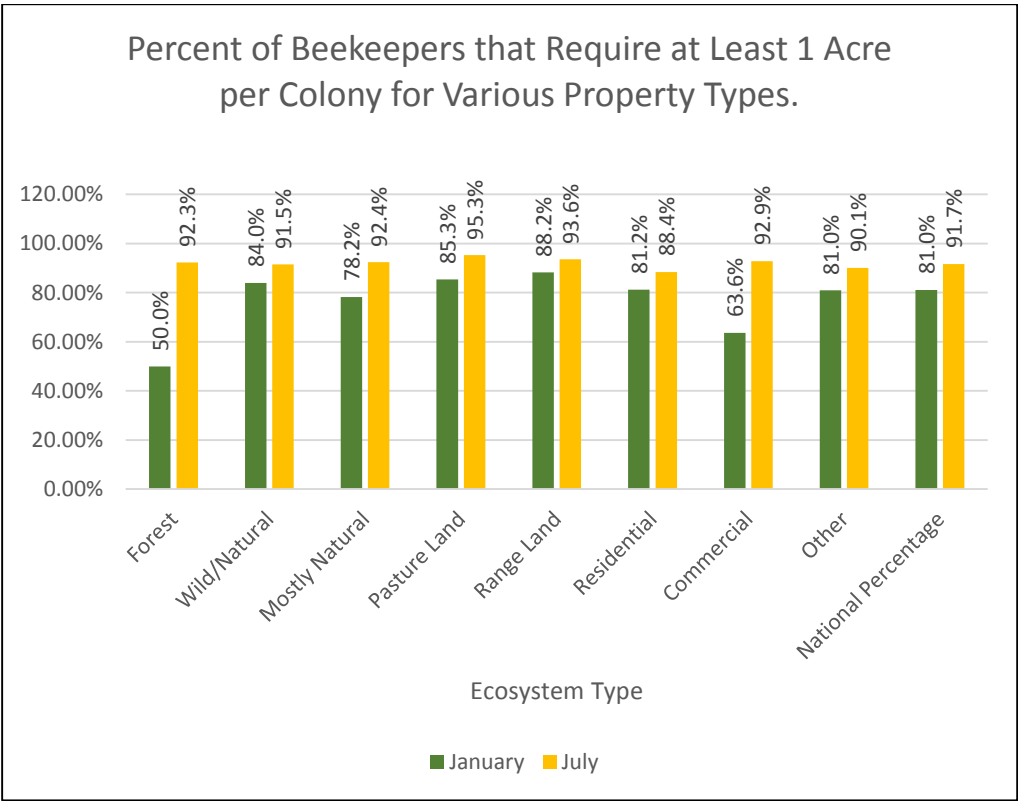
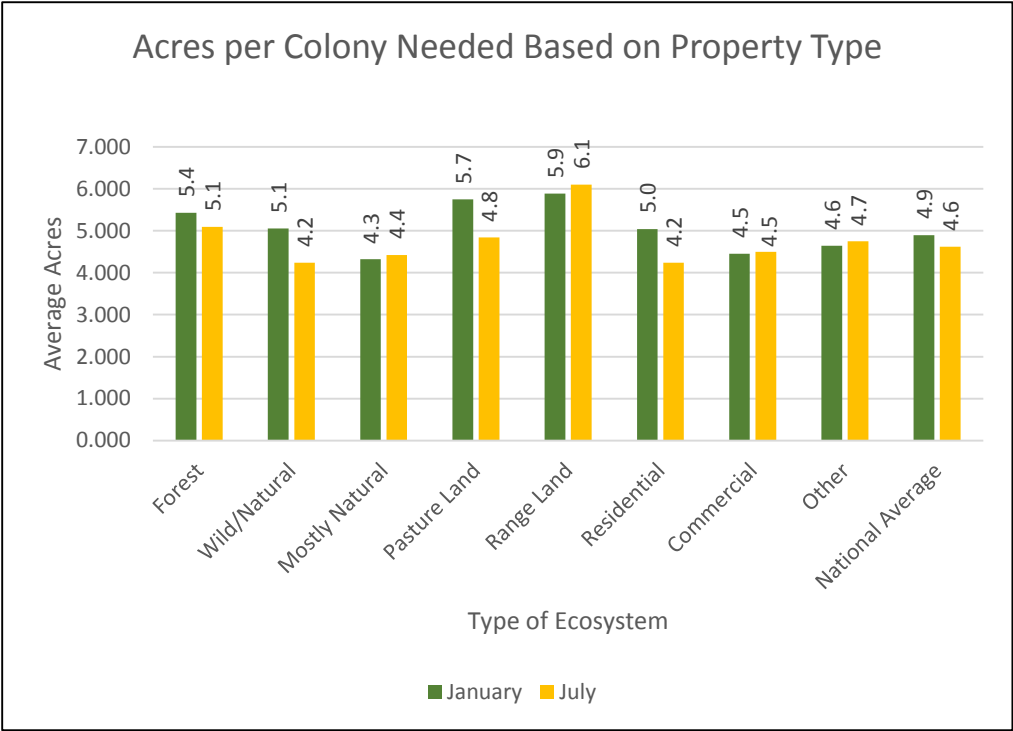
The national and state by state results are below. The survey questions are shown at the end.

# NAPPC National Beekeeper Forage Survey

## National Survey Results

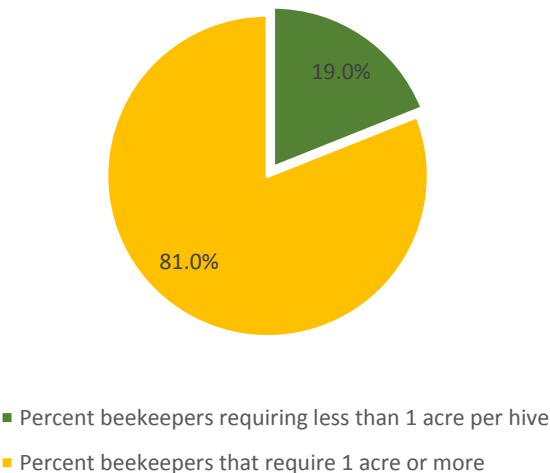


# NAPPC National Beekeeper Forage Survey

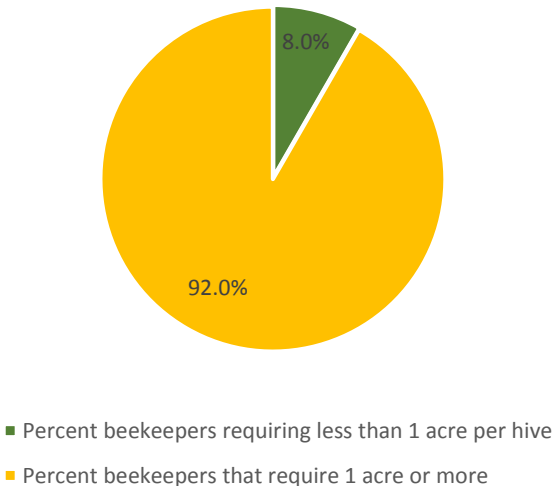


# NAPPC National Beekeeper Forage Survey

Percent of U.S. Beekeepers that Require at least 1 Acre per Colony in January



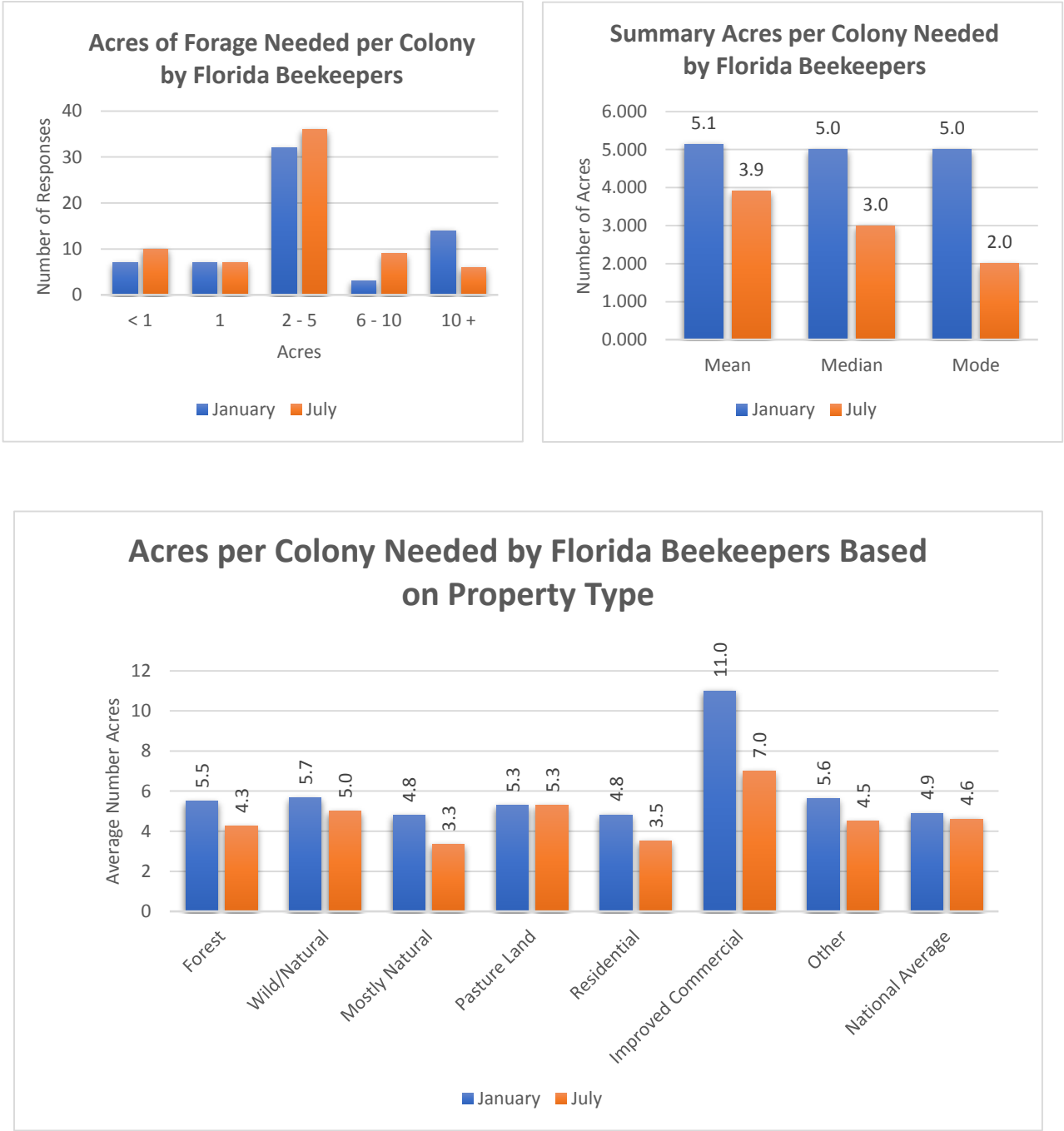
Percent of U.S. Beekeepers that Require at Least 1 Acre per Colony in July



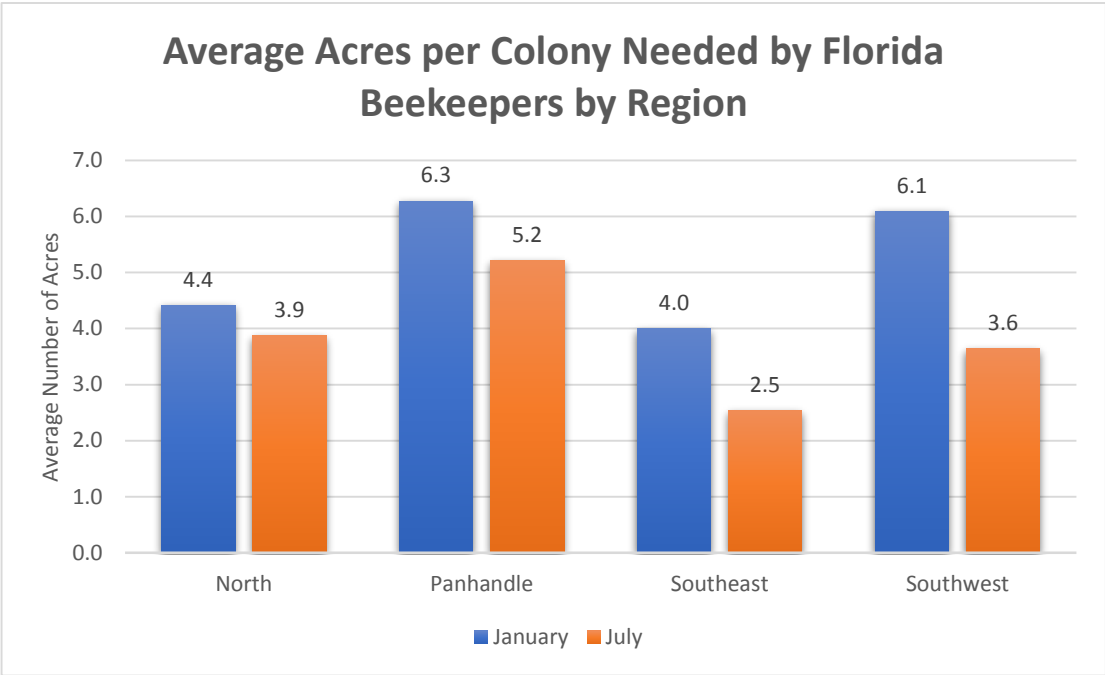
# NAPPC National Beekeeper Forage Survey

## Florida

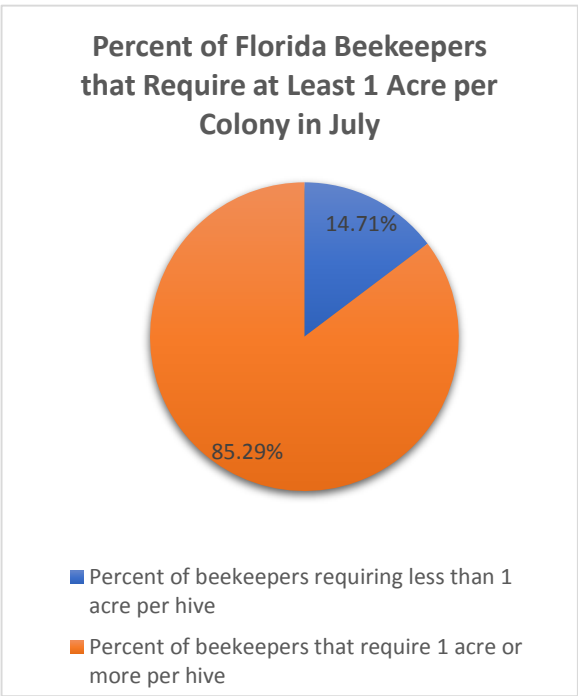
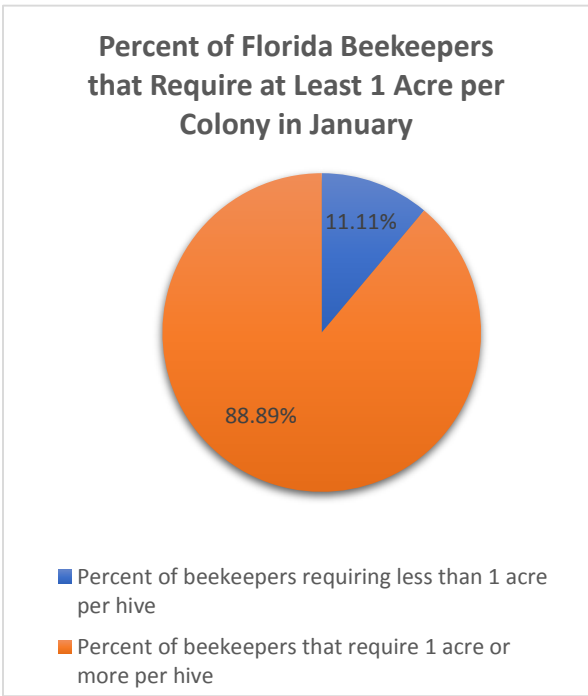
In Florida, a total of 73 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

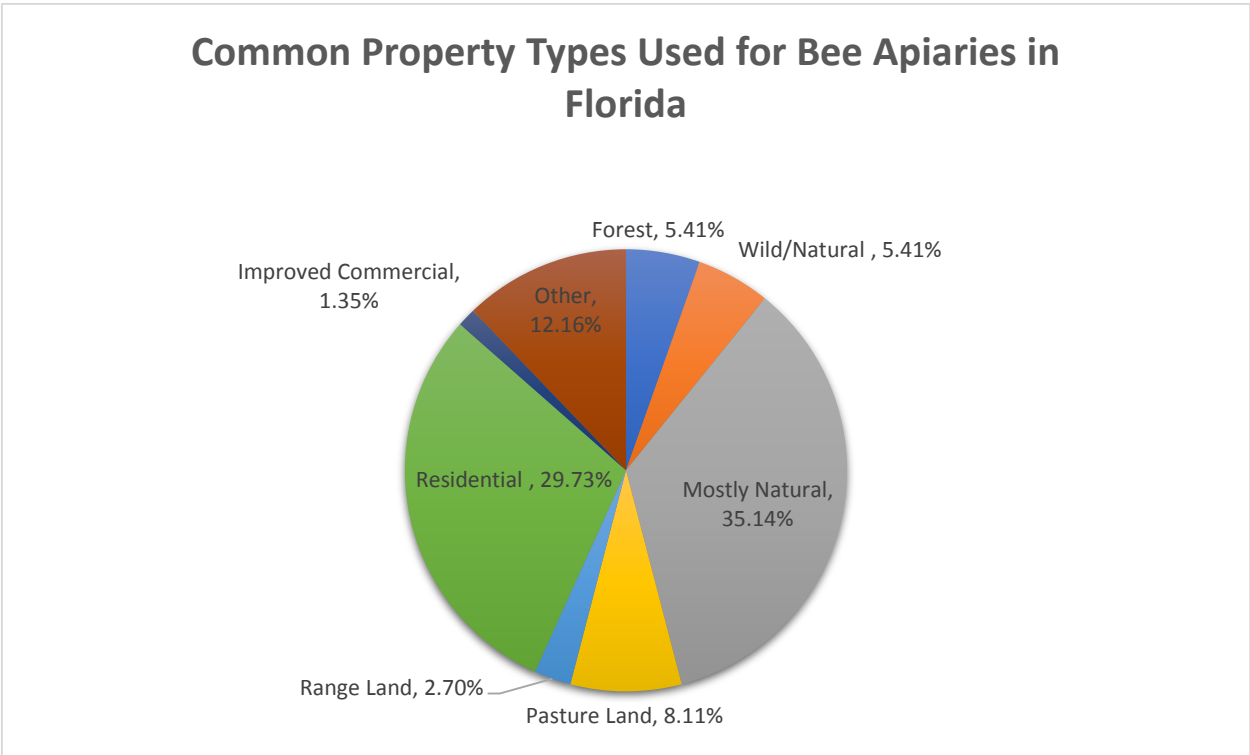
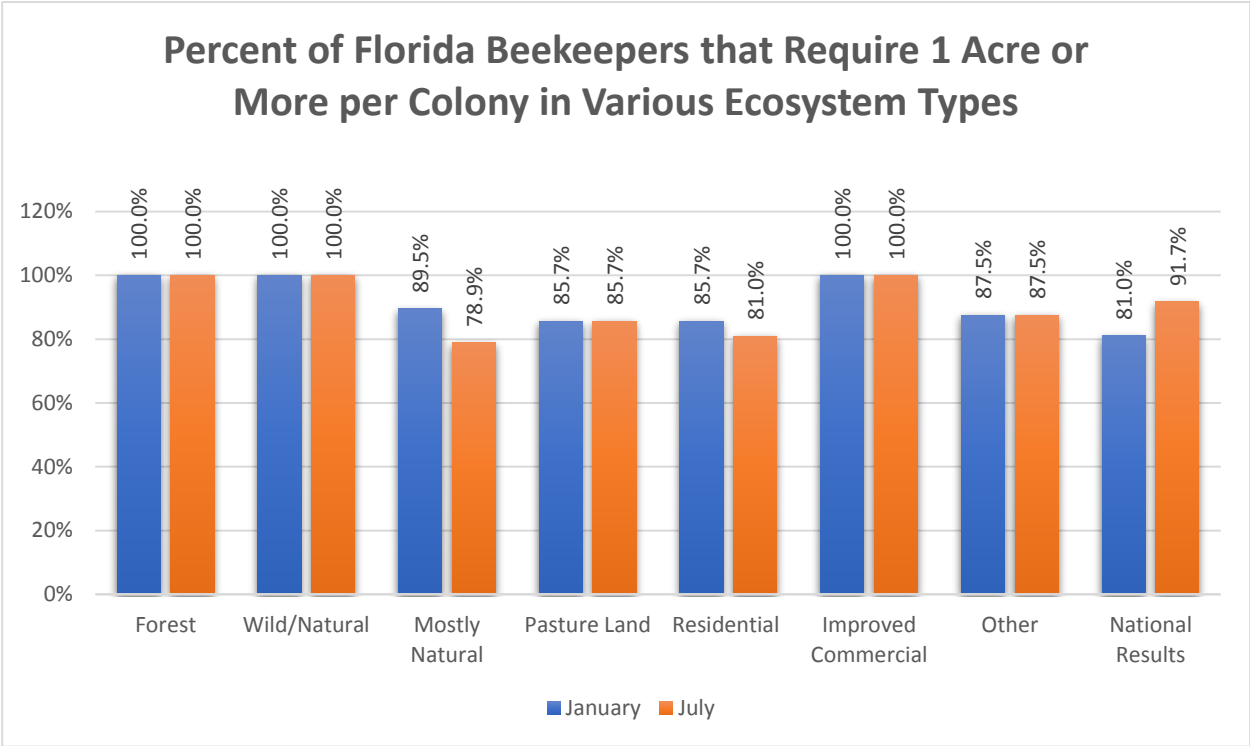


The regions were divided by county as follows: North: Alachua, Bradford, Clay, Marion, Nassau, Putnam, Seminole, St. John, Union; Panhandle: Bay, Calhoun, Escambia, Gadsden, Gulf, Jackson, Jefferson, Leon, Okaloosa, Santa Rosa, Wakulla, Walton, Washington; Southeast: Brevard, Broward, Martin, Orange, Osceola, Palm Beach, St. Lucie; and Southwest: Collier, Lee.



# NAPPC National Beekeeper Forage Survey

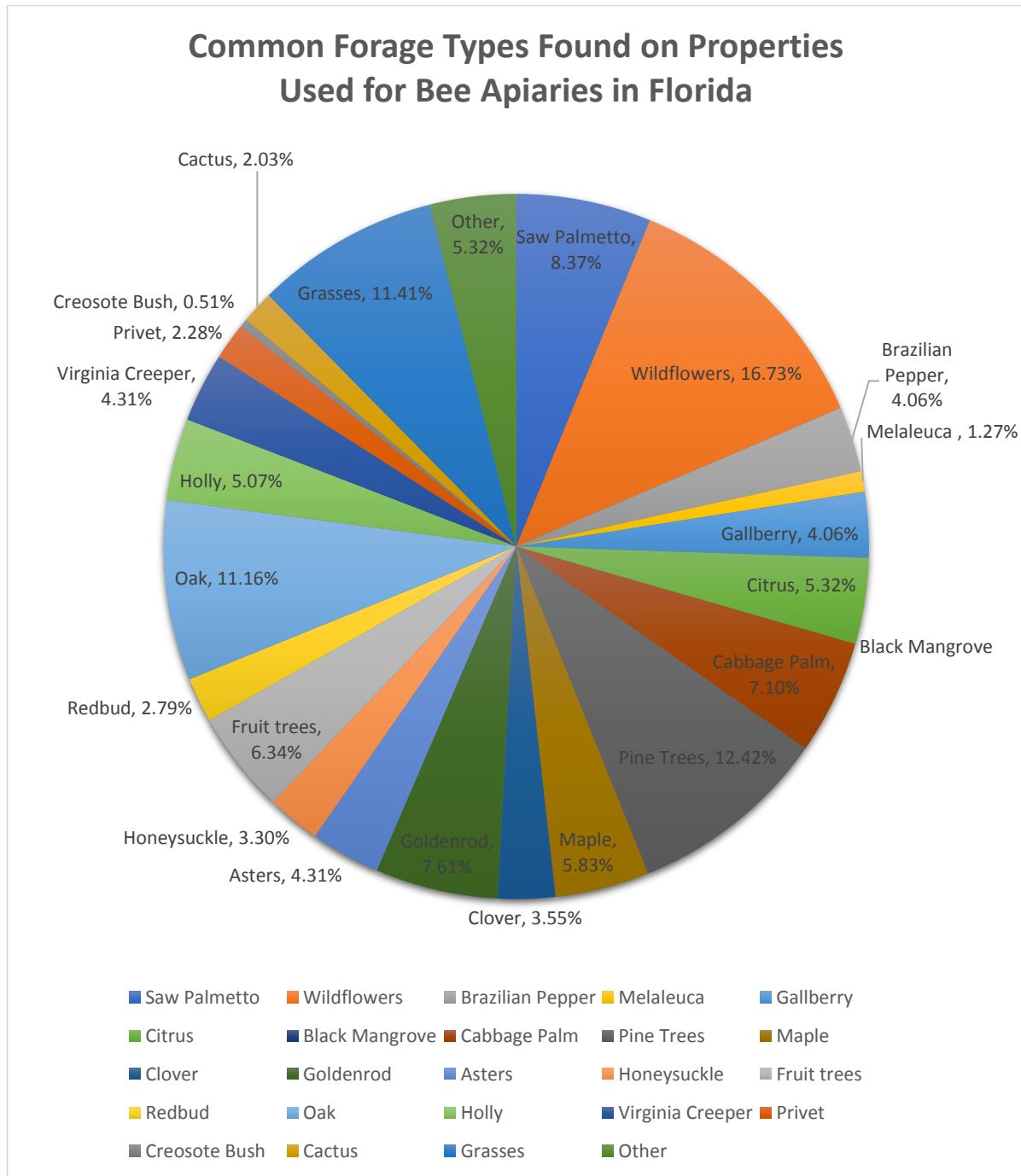
## Florida (Continued)





# NAPPC National Beekeeper Forage Survey

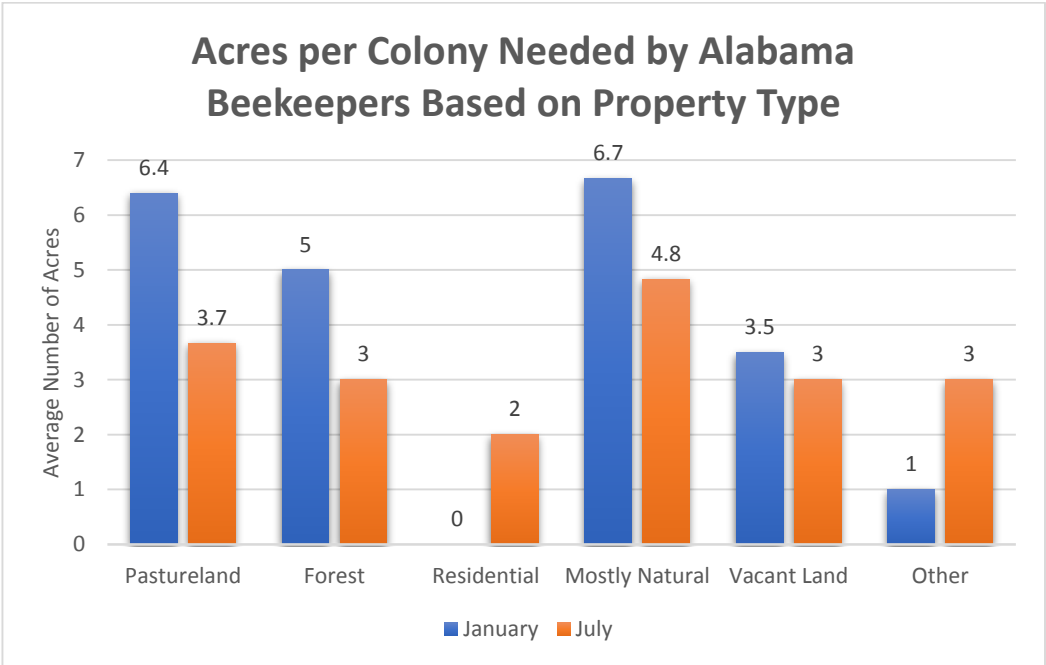
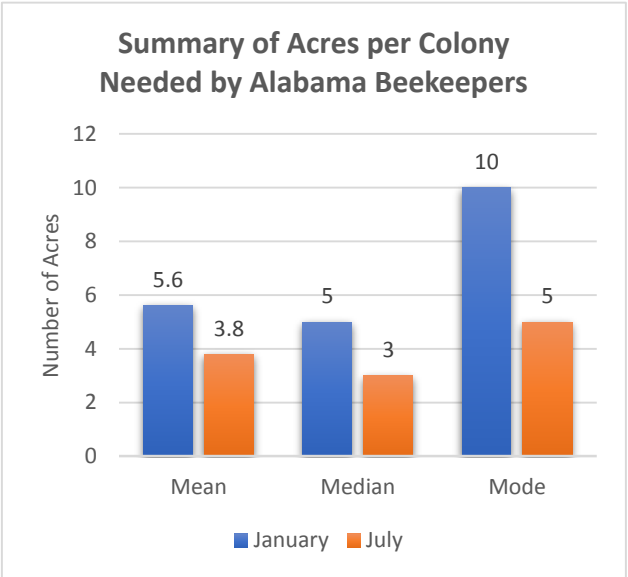
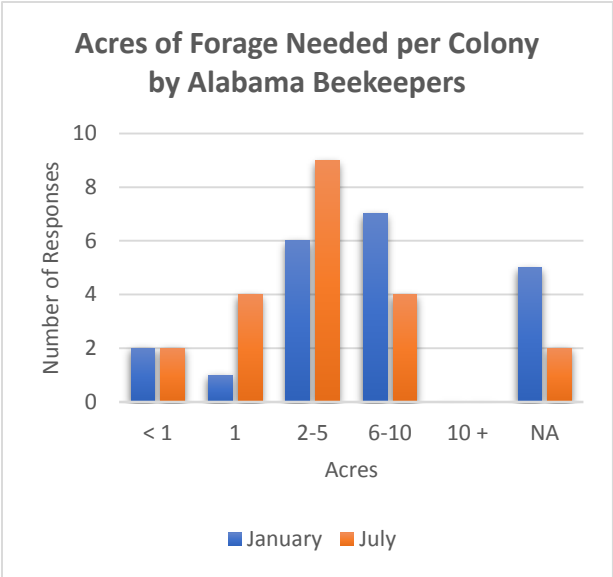
## Florida (Continued)



# NAPPC National Beekeeper Forage Survey

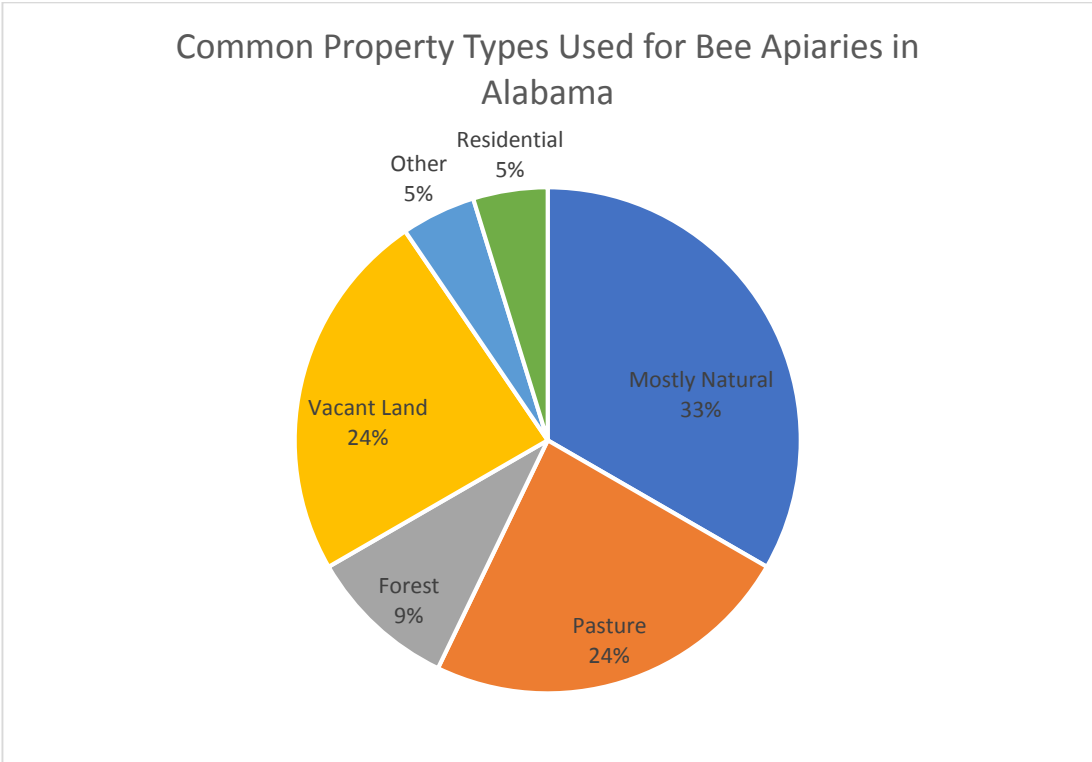
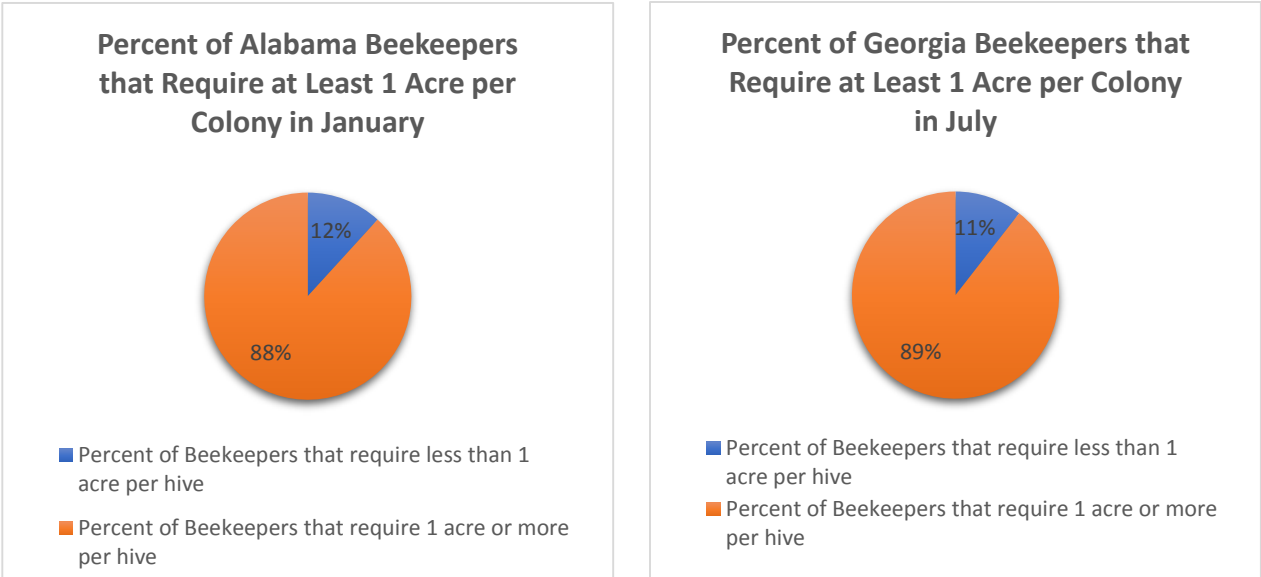
## Alabama

In Alabama, a total of 21 beekeepers responded to the survey.



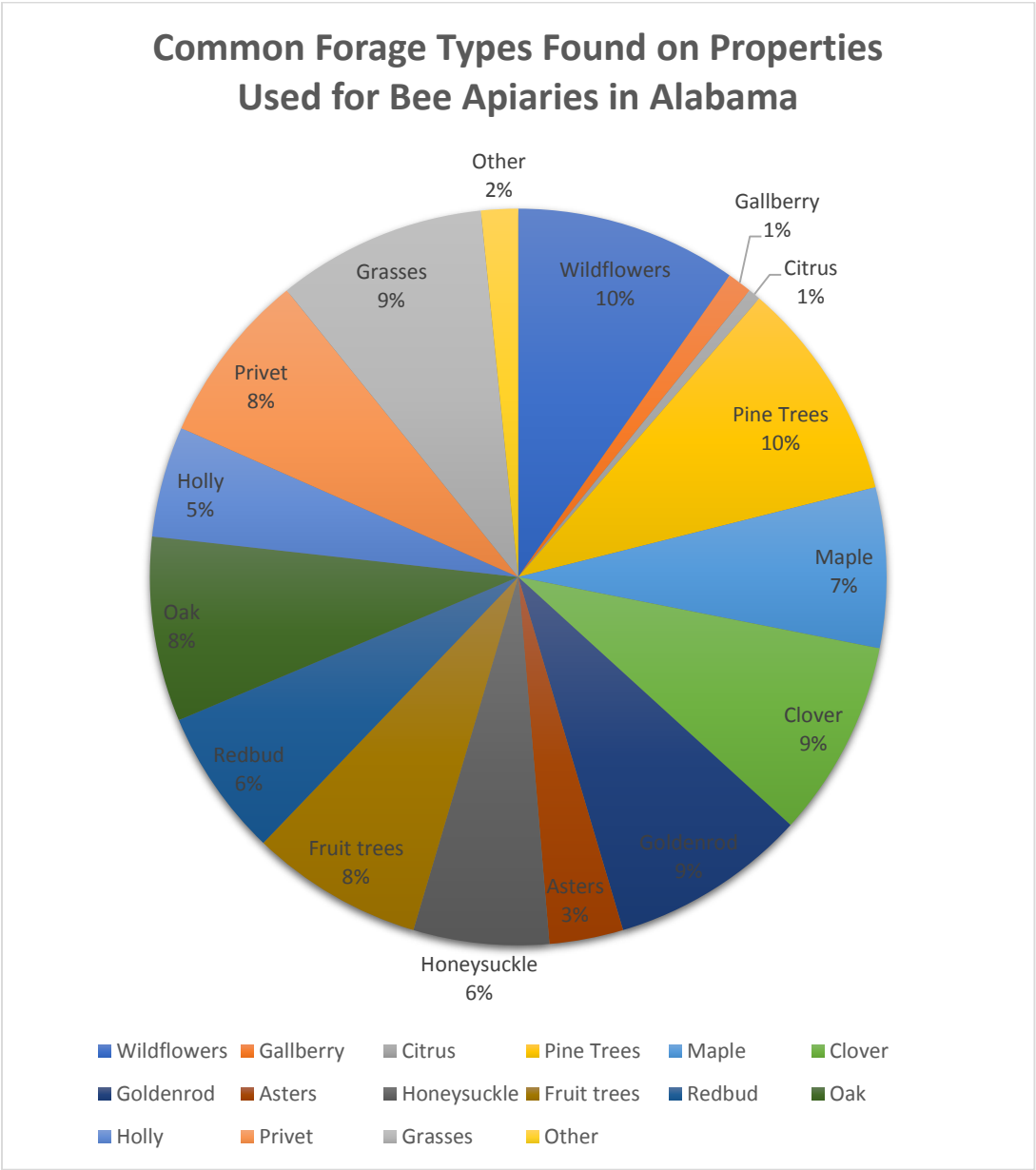
# NAPPC National Beekeeper Forage Survey

## Alabama (continued)



# NAPPC National Beekeeper Forage Survey

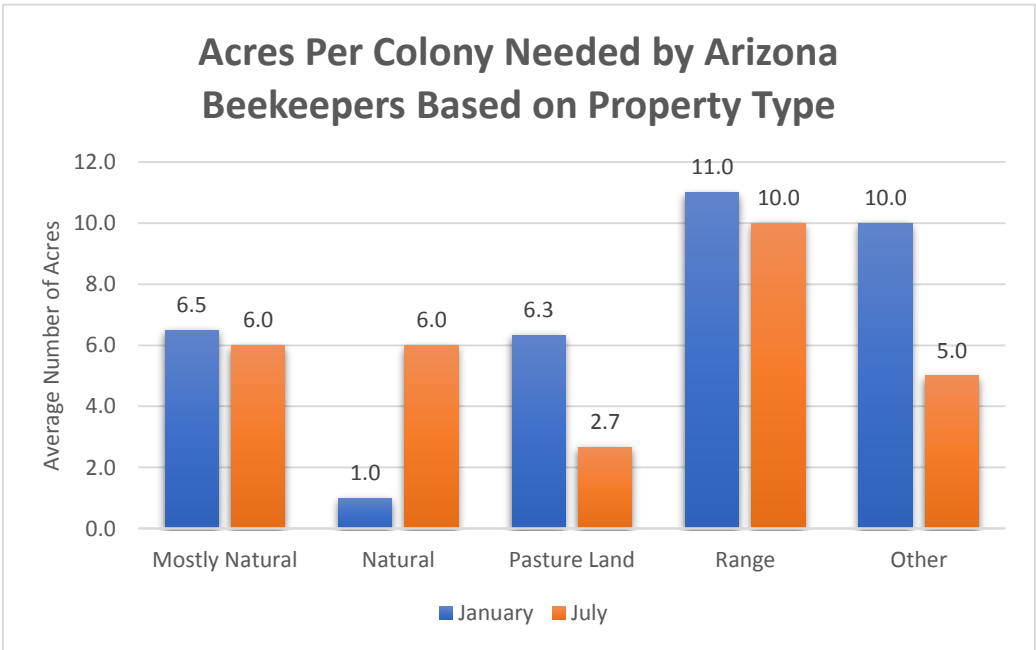
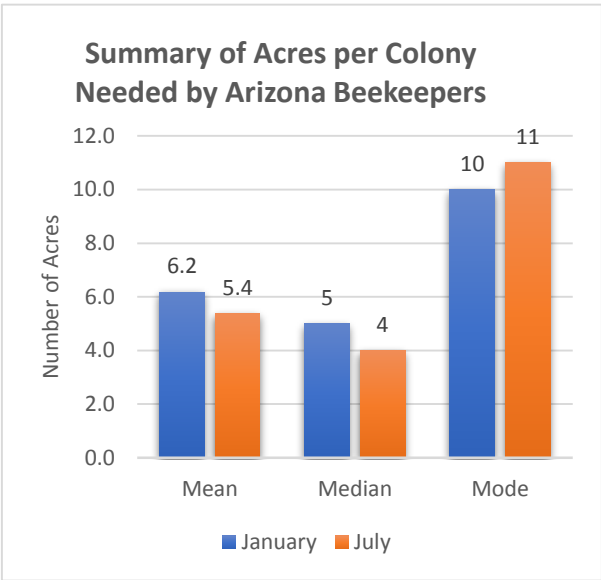
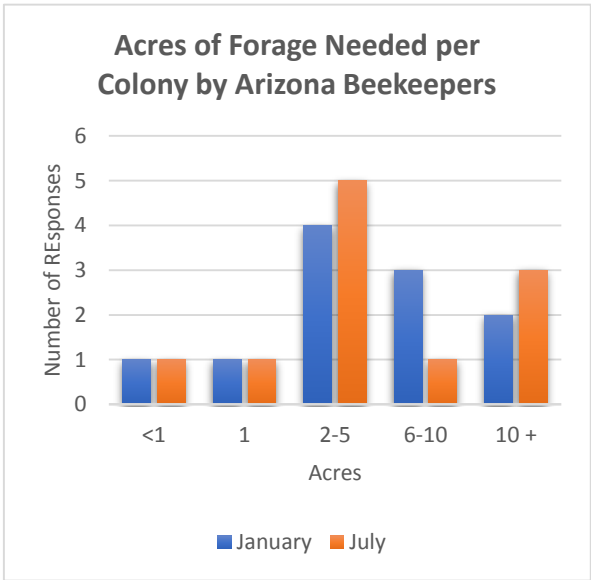
Alabama (continued)



# NAPPC National Beekeeper Forage Survey

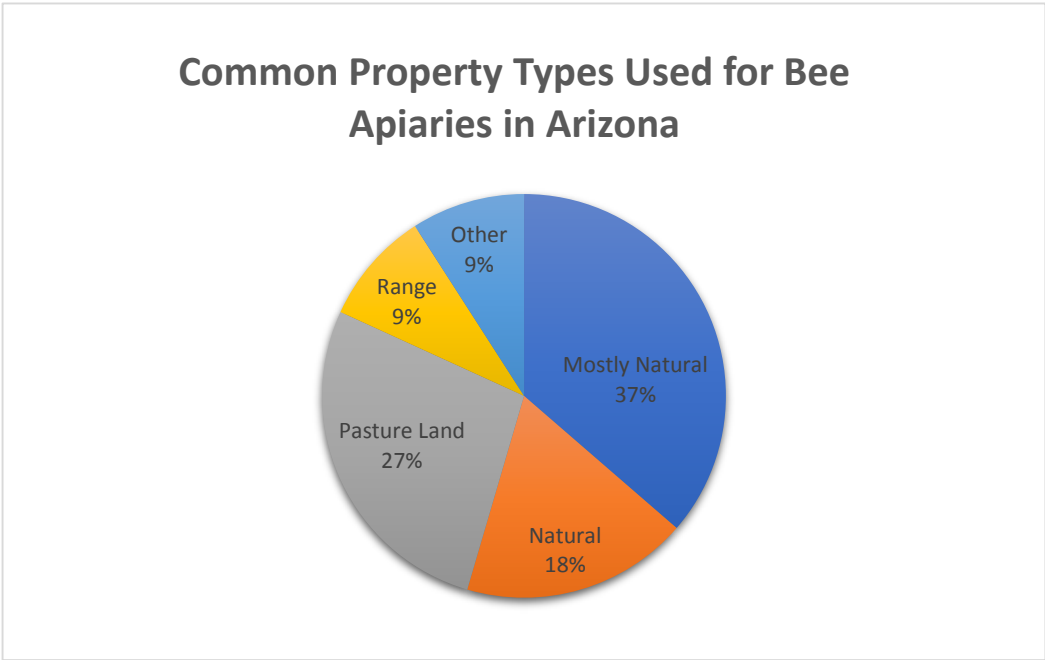
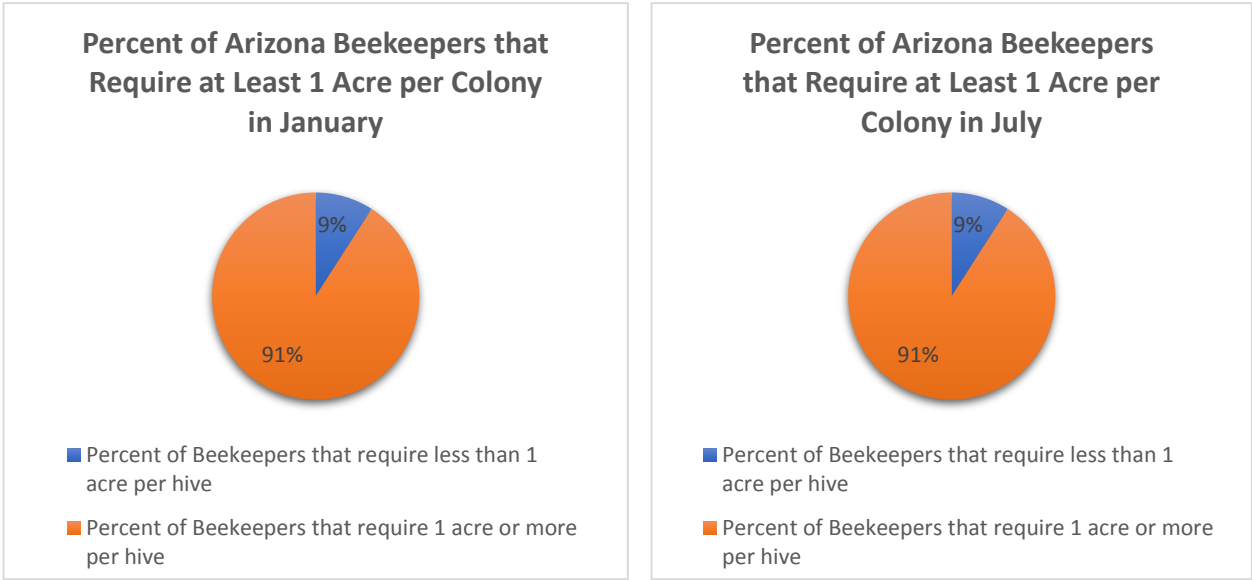
## Arizona

In Arizona, a total of 11 beekeepers responded to the survey.



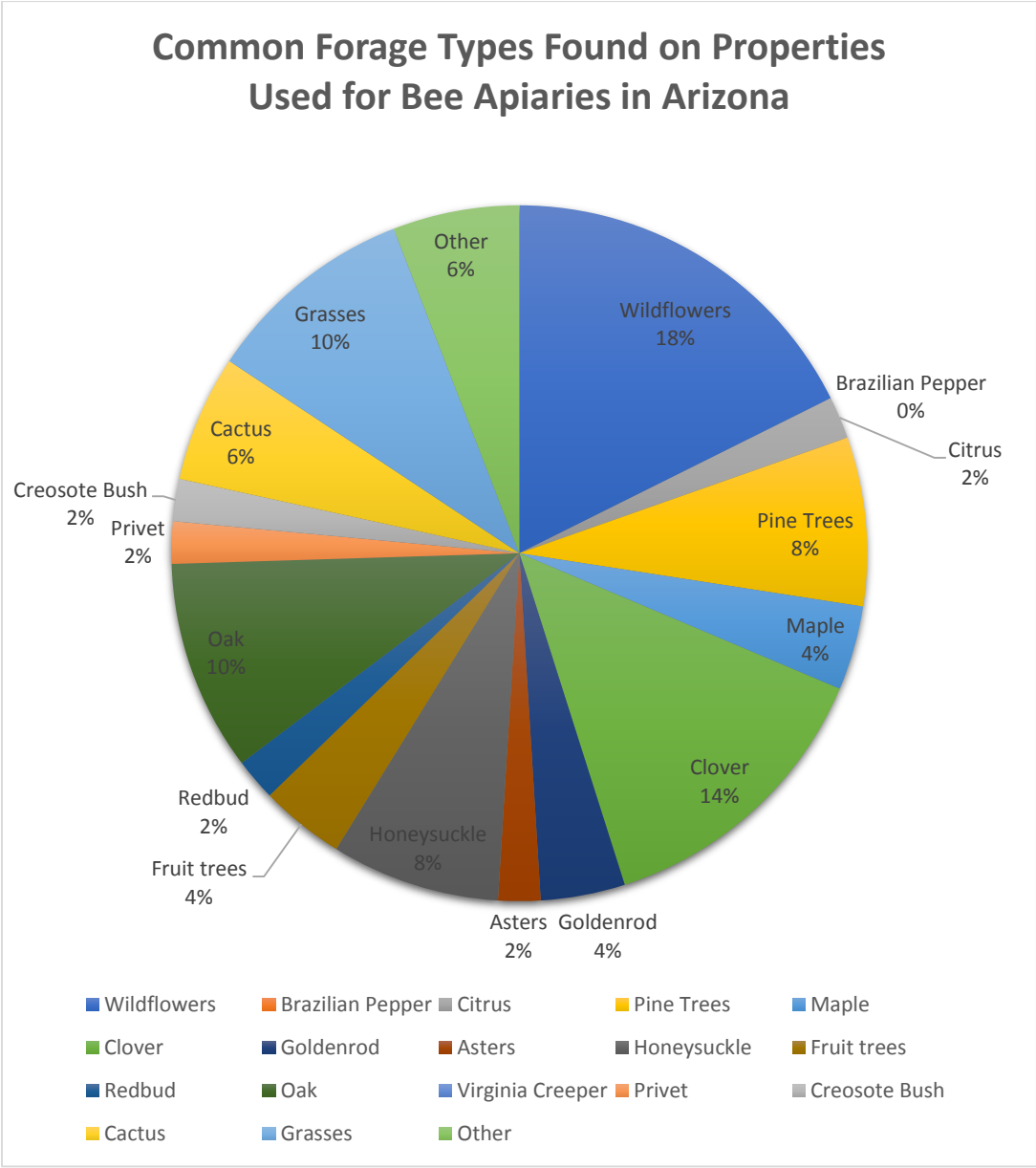
# NAPPC National Beekeeper Forage Survey

## Arizona (continued)



# NAPPC National Beekeeper Forage Survey

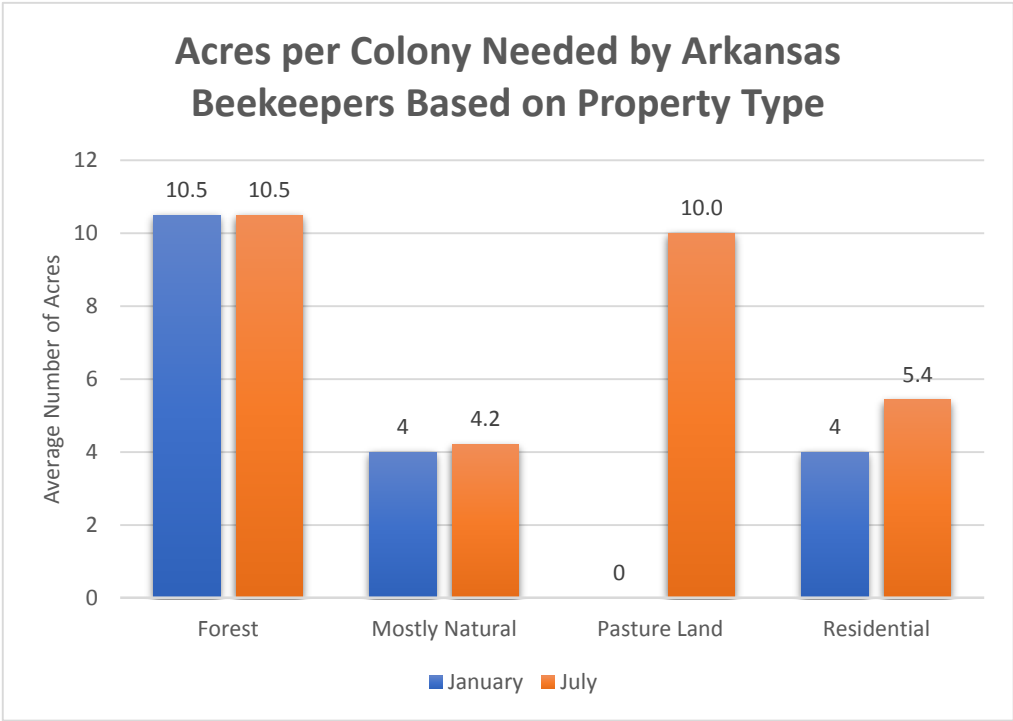
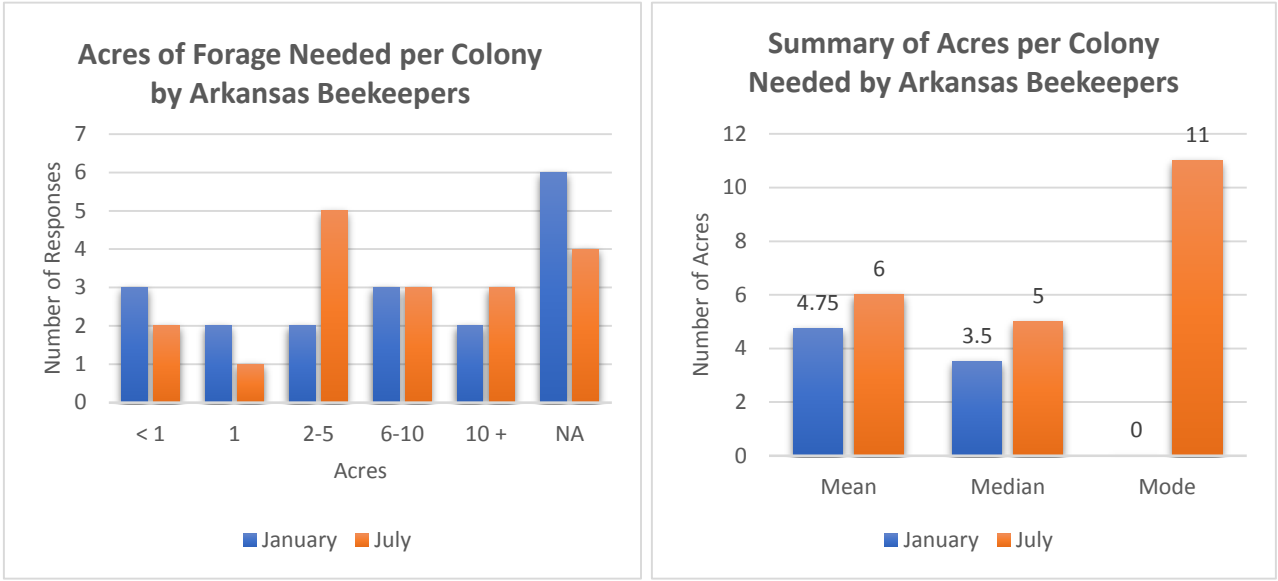
Arizona (continued)



# NAPPC National Beekeeper Forage Survey

## Arkansas

In Arkansas, a total of 19 beekeepers responded to the survey.

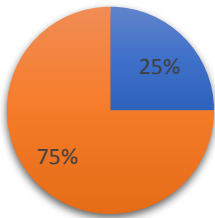




# NAPPC National Beekeeper Forage Survey

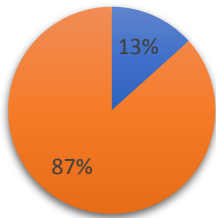
## Arkansas (continued)

**Percent of Arkansas Beekeepers that Require at Least 1 Acre per Colony in January**



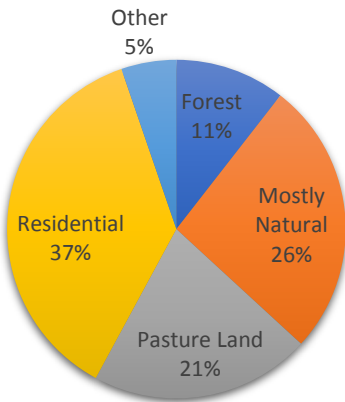
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

**Percent of Arkansas Beekeepers that Require at Least 1 Acre per Colony in July**



- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

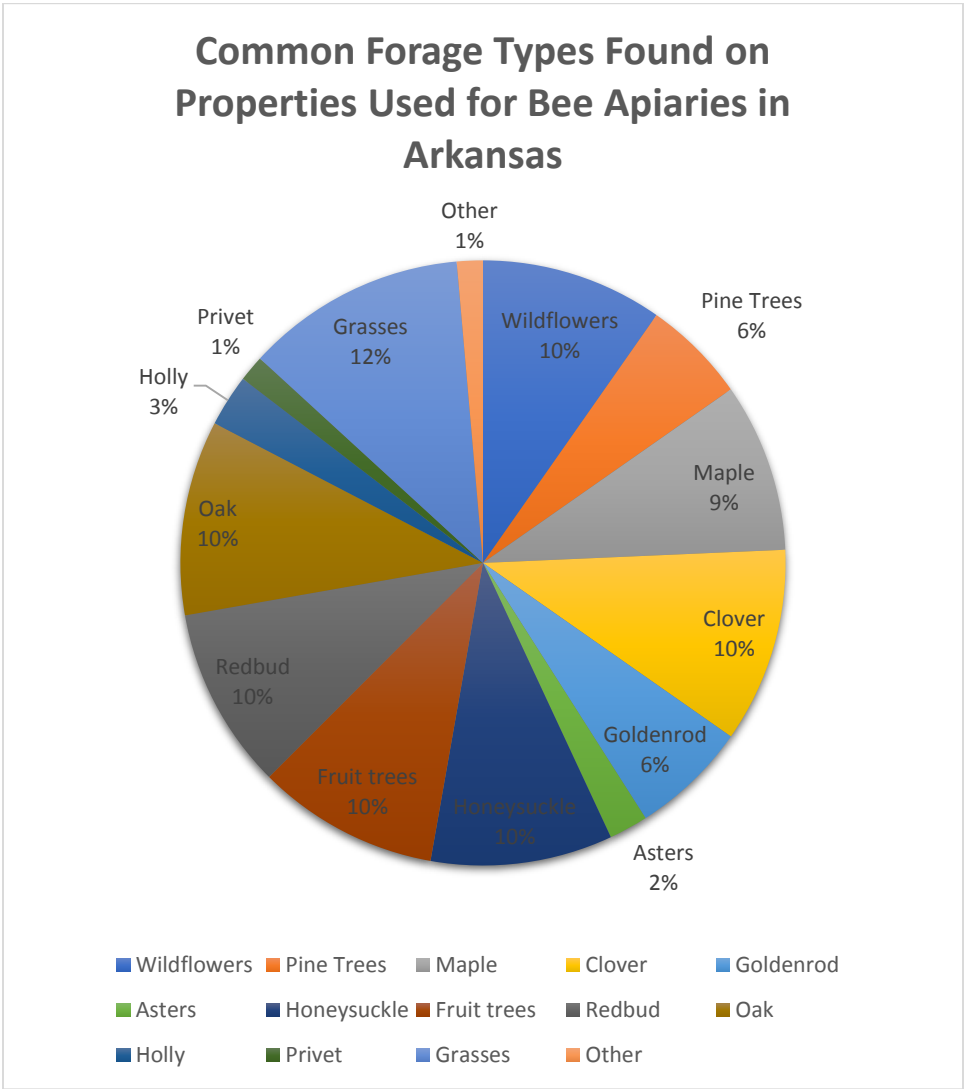
**Common Property Types Used for Bee Apiaries in Arkansas**



- Forest
- Mostly Natural
- Pasture Land
- Residential
- Other

# NAPPC National Beekeeper Forage Survey

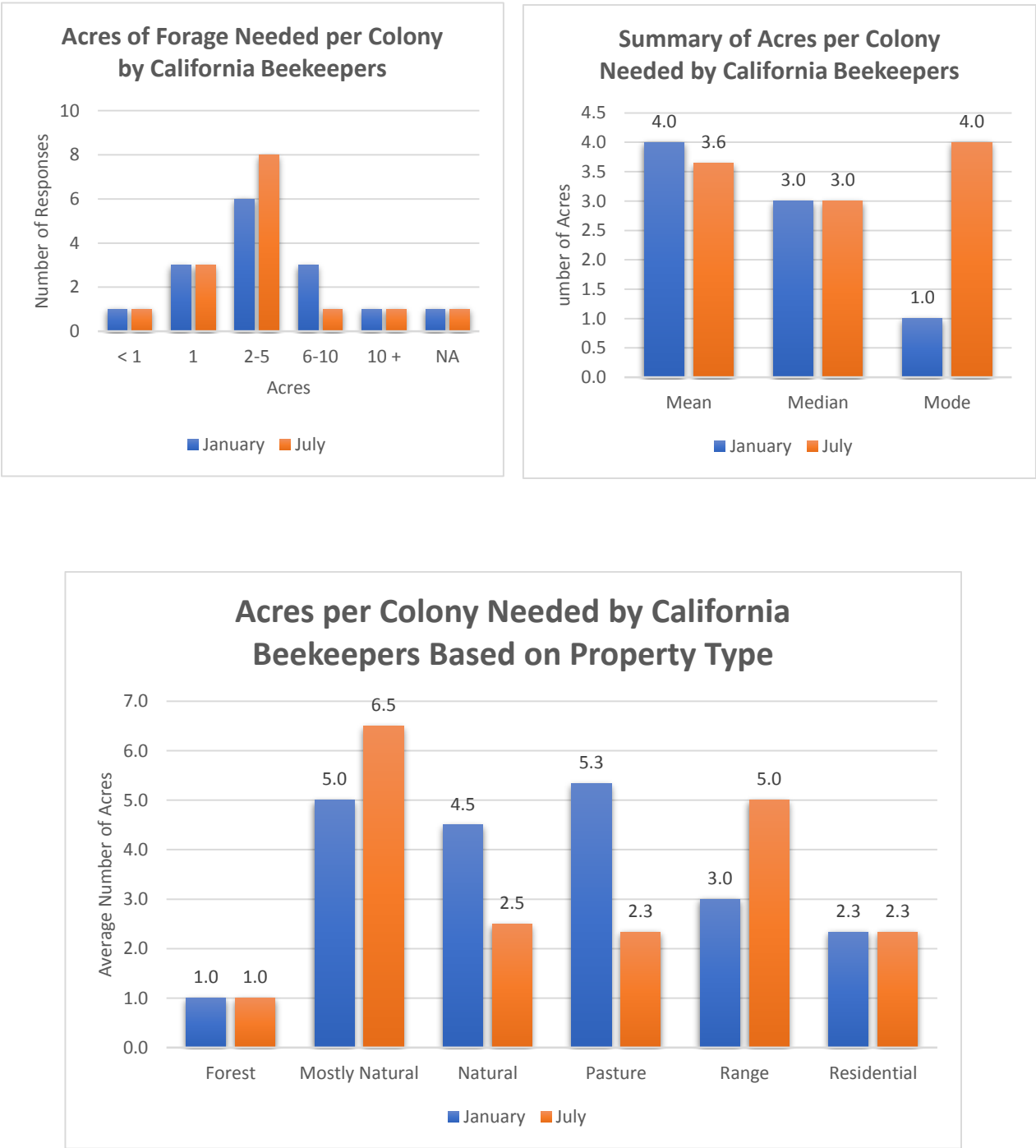
Arkansas (continued)



# NAPPC National Beekeeper Forage Survey

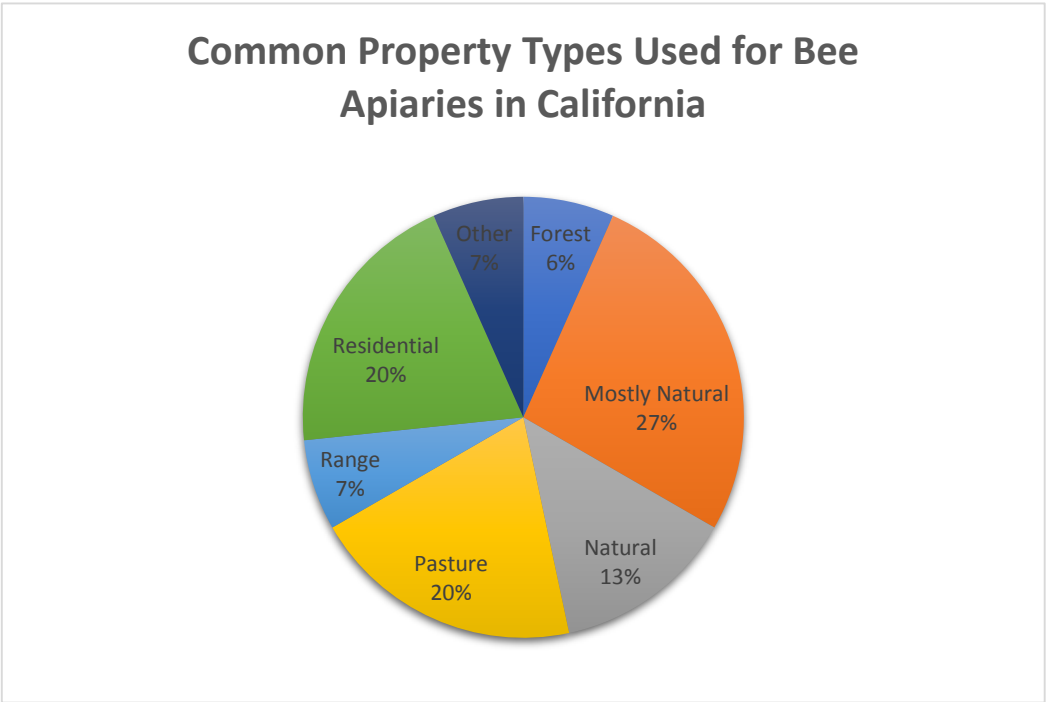
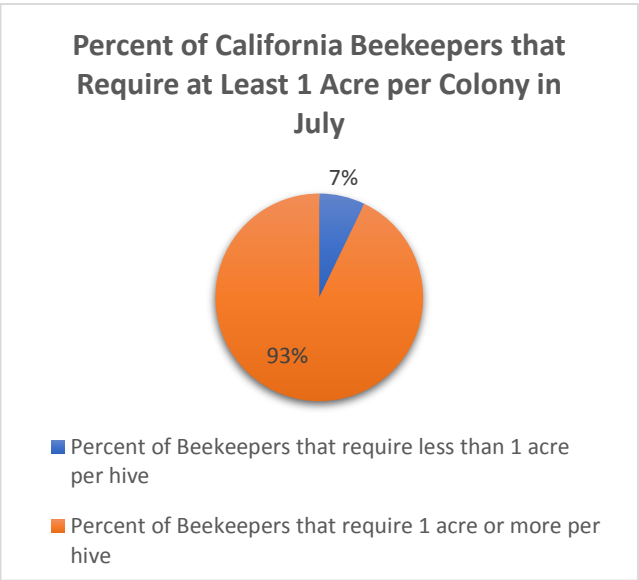
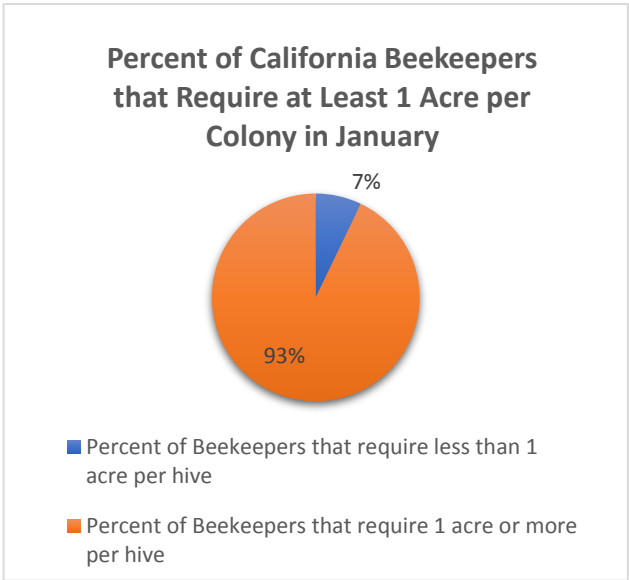
## California

In California, a total of 15 beekeepers responded to the survey.



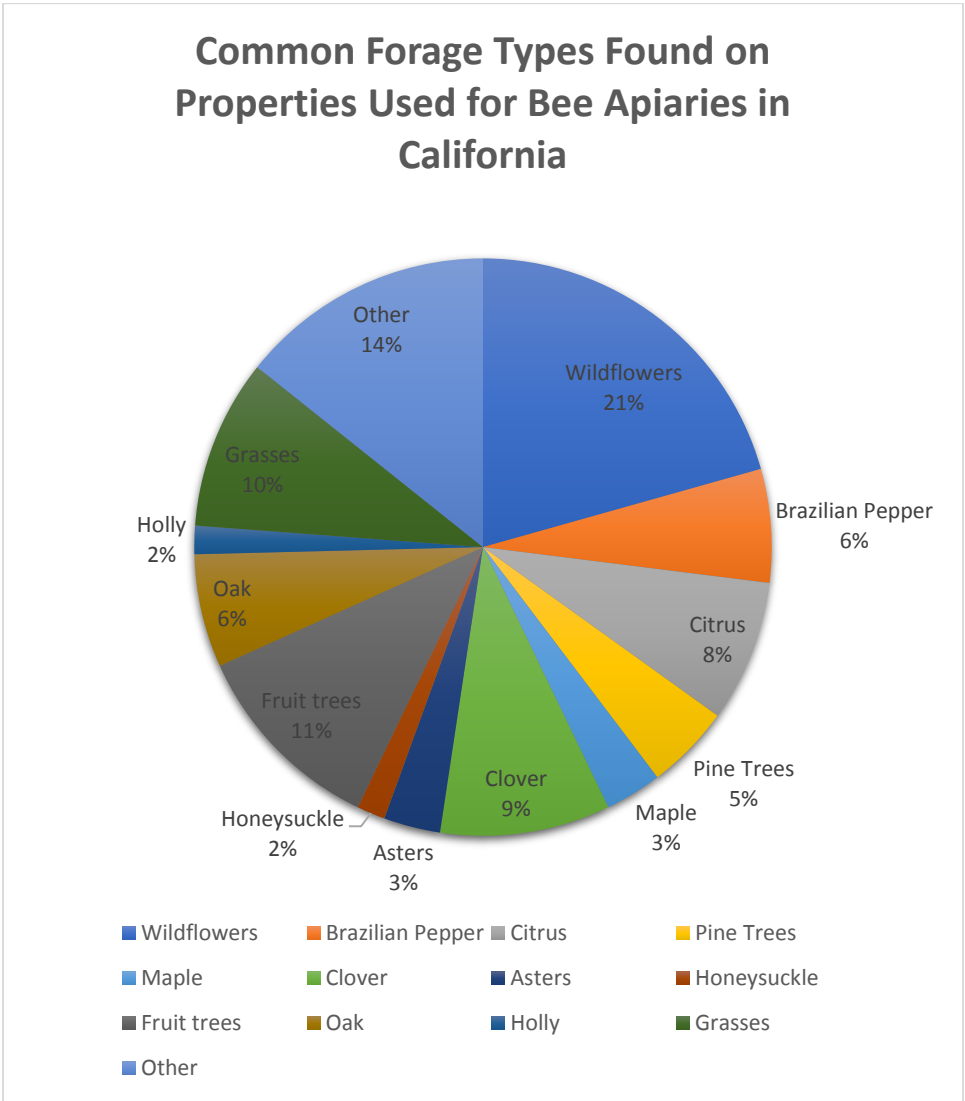
# NAPPC National Beekeeper Forage Survey

## California (continued)



# NAPPC National Beekeeper Forage Survey

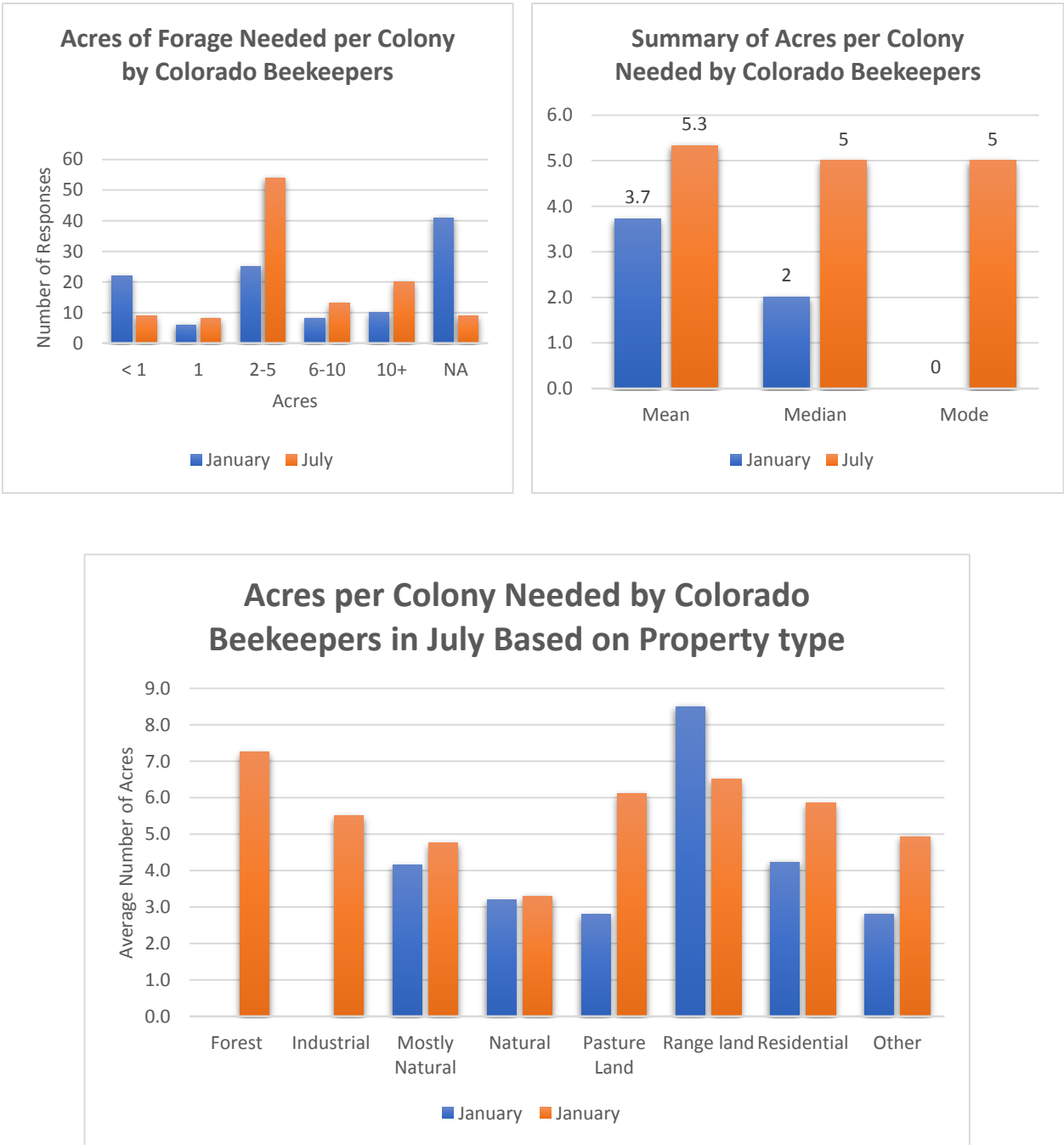
California (continued)



# NAPPC National Beekeeper Forage Survey

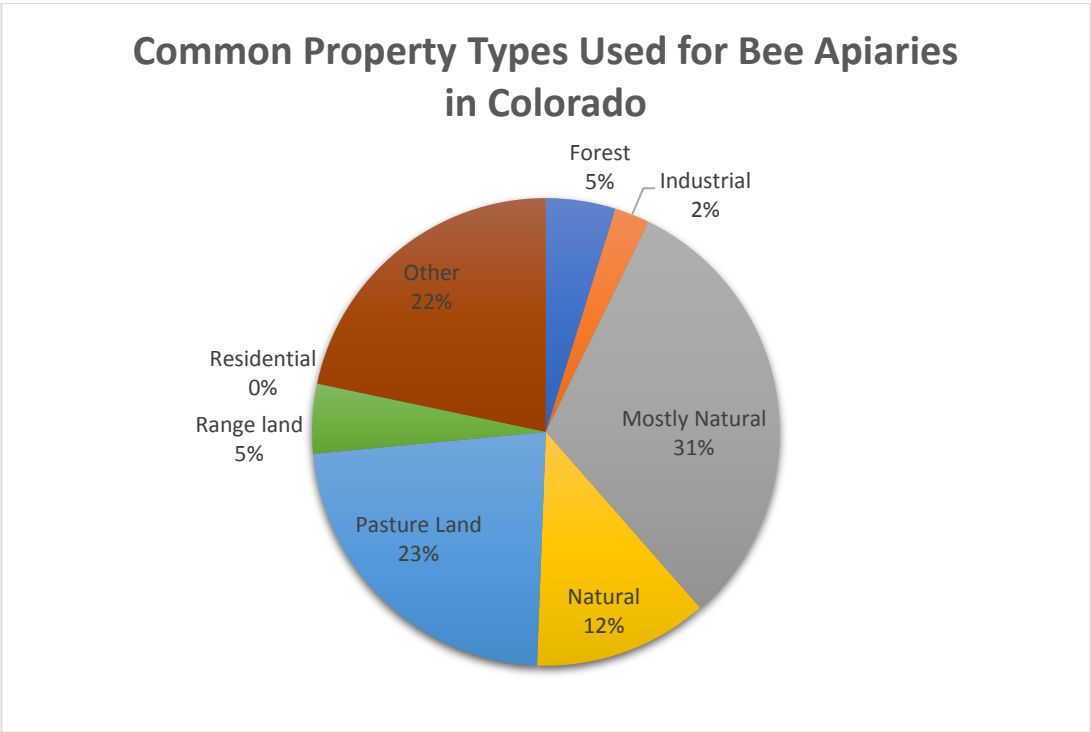
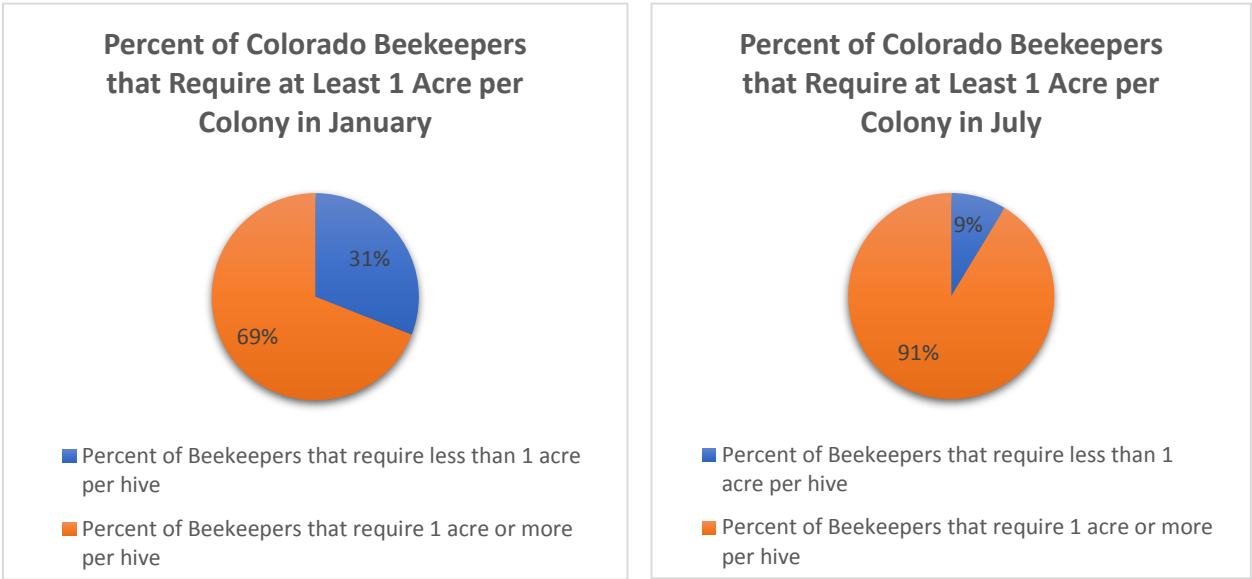
## Colorado

In Colorado, a total of 117 beekeepers responded to the survey.



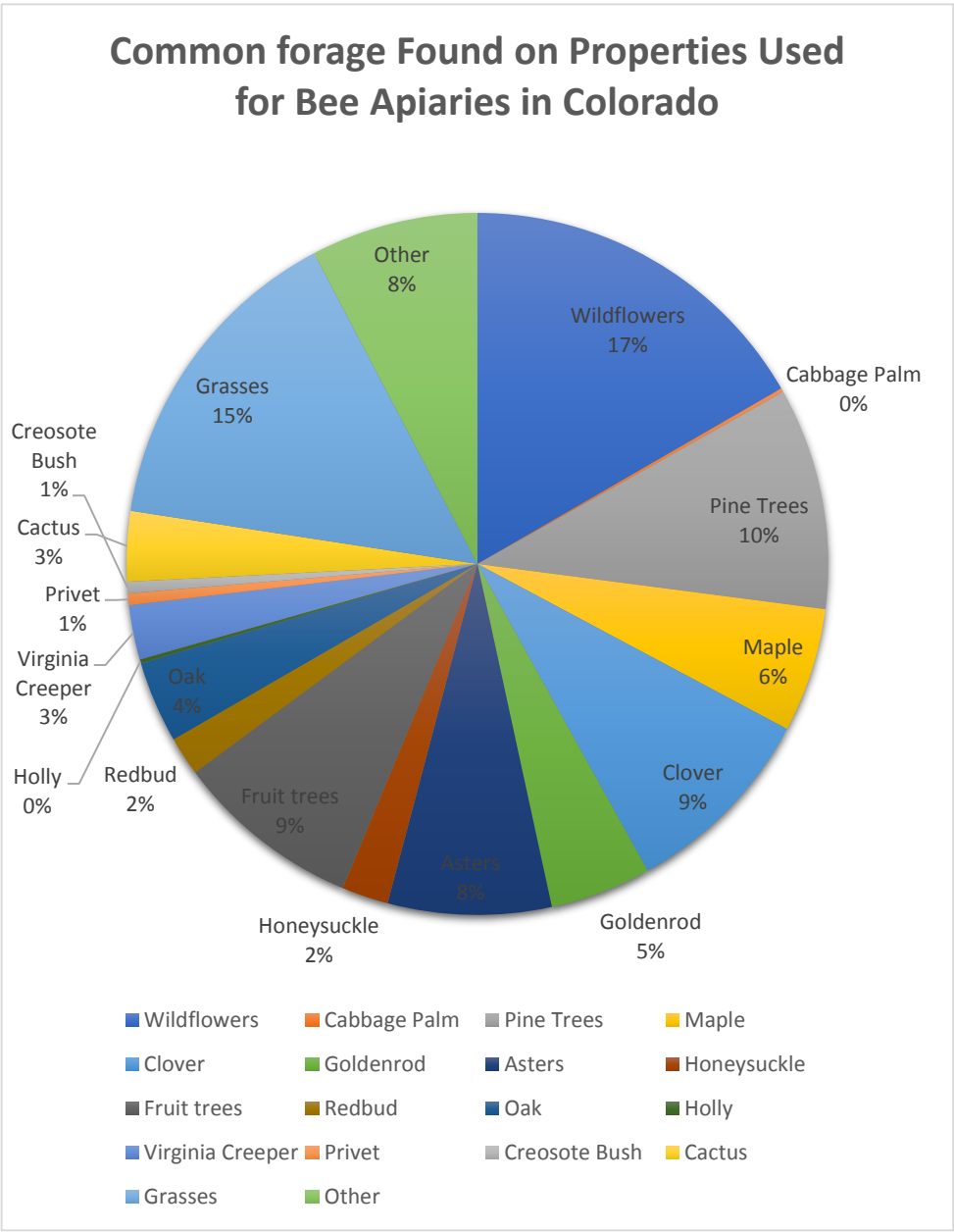
# NAPPC National Beekeeper Forage Survey

## Colorado (continued)



# NAPPC National Beekeeper Forage Survey

Colorado (continued)

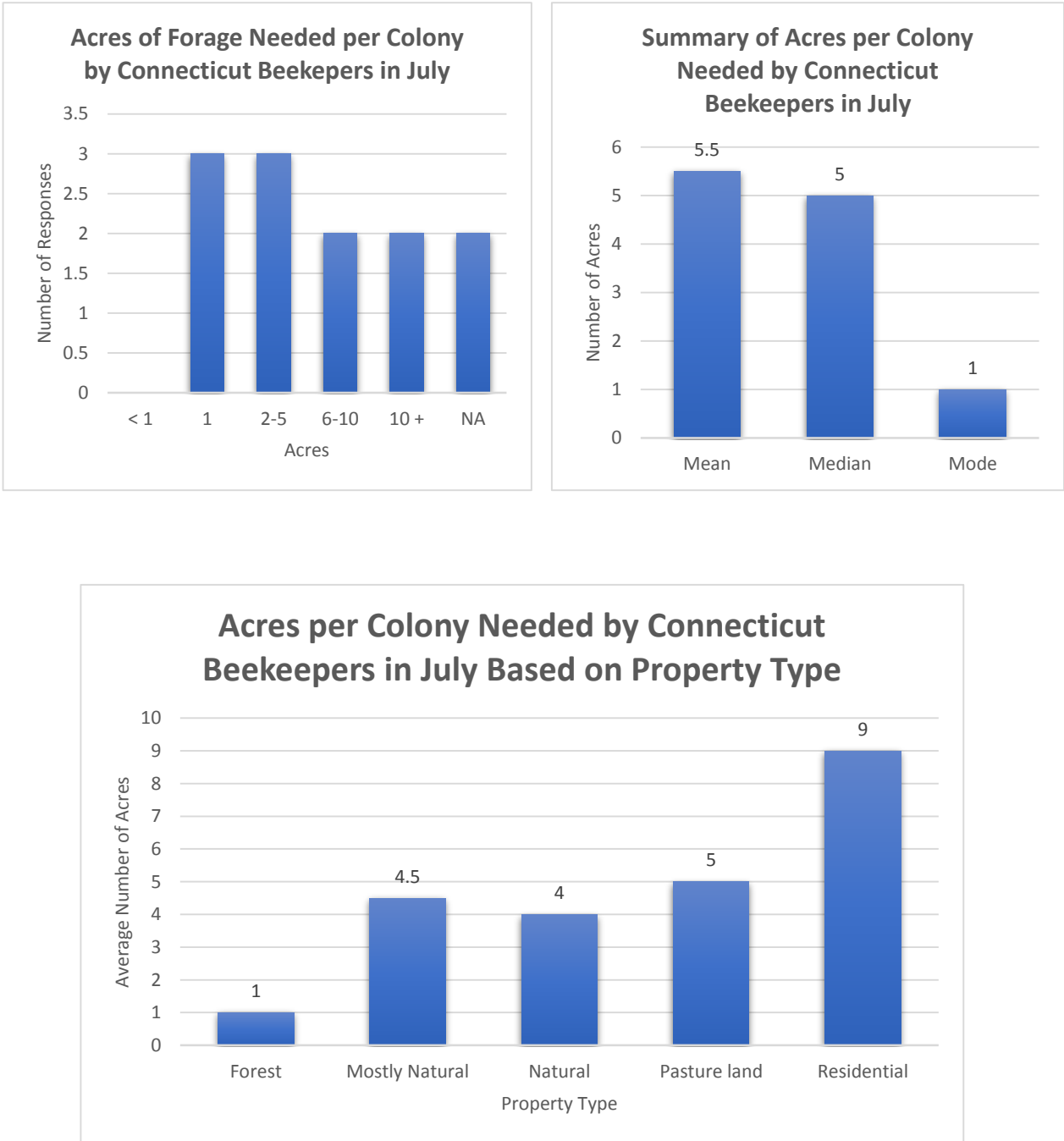




# NAPPC National Beekeeper Forage Survey

## Connecticut

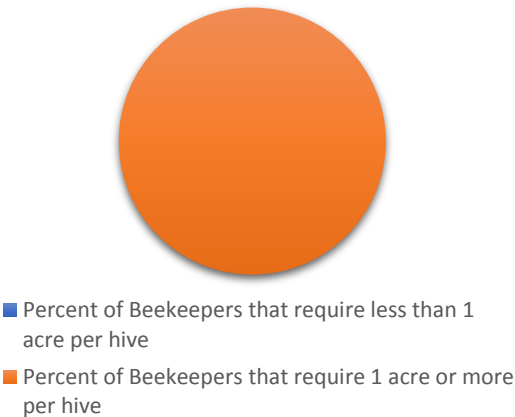
In Connecticut, a total of 12 beekeepers responded to the survey. No data was available for January because bees are typically not active in cold weather.



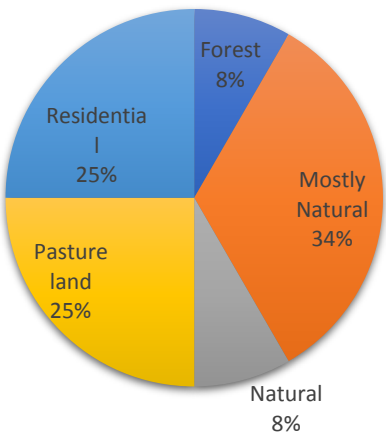
# NAPPC National Beekeeper Forage Survey

## Connecticut (continued)

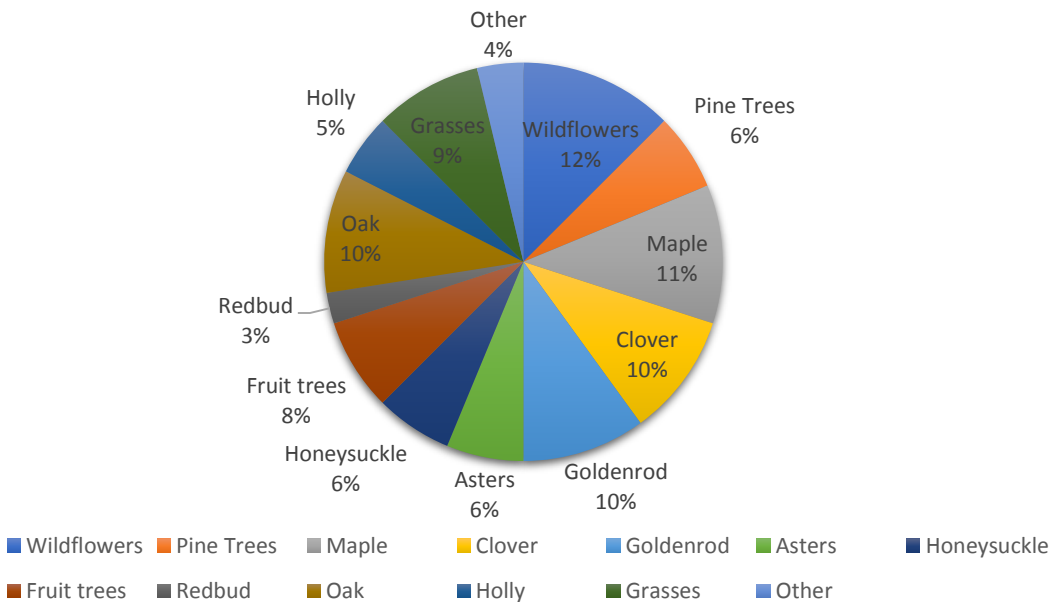
Percent of Connecticut Beekeepers that Require at Least 1 Acre per Colony in July



Common Property Types Used for Bee Apiaries in Connecticut



Common Forage Types Found on Properties Used for Bee Apiaries in Connecticut



# NAPPC National Beekeeper Forage Survey

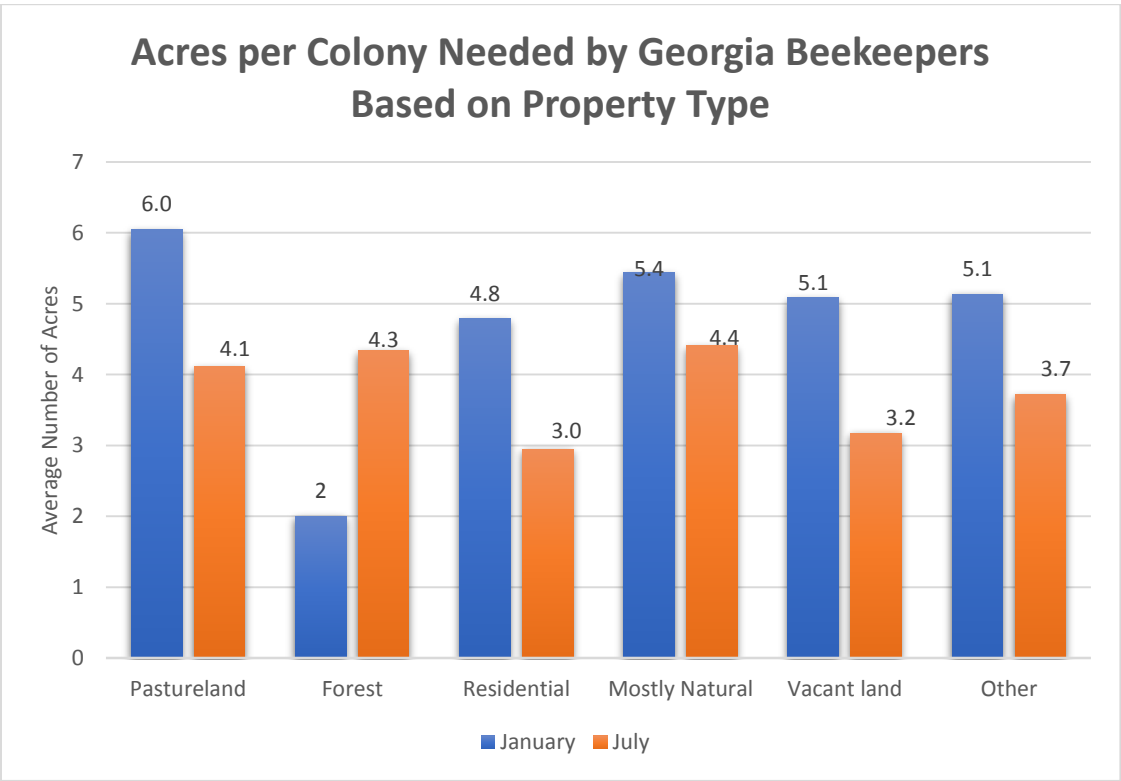
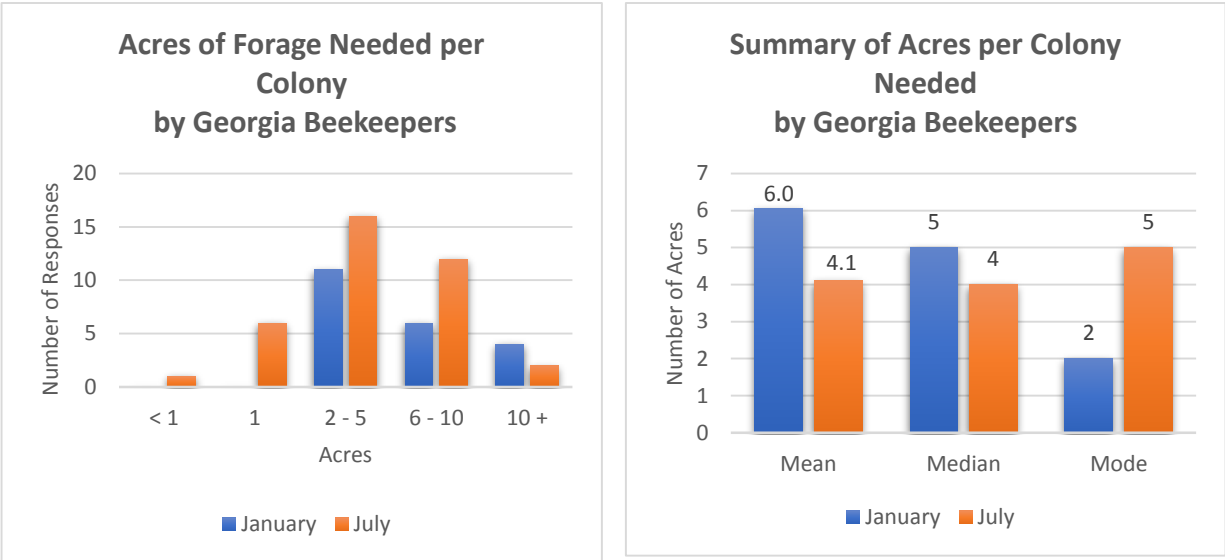
## Delaware

No Data was available for Delaware.

# NAPPC National Beekeeper Forage Survey

## Georgia

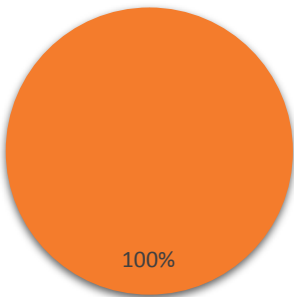
In Georgia, a total of 30 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

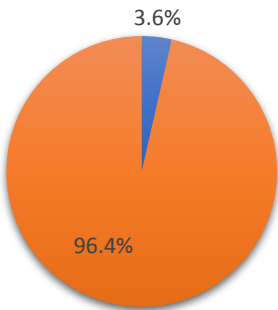
Georgia (continued)

Percent of Georgia Beekeepers that Require at Least 1 Acre per Colony in January



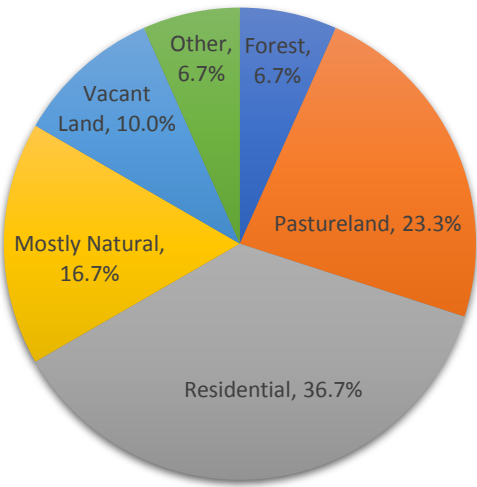
■ Percent of Beekeepers requiring more than 1 acre per hive

Percent of Georgia Beekeepers that Require at Least 1 Acre per Colony in July



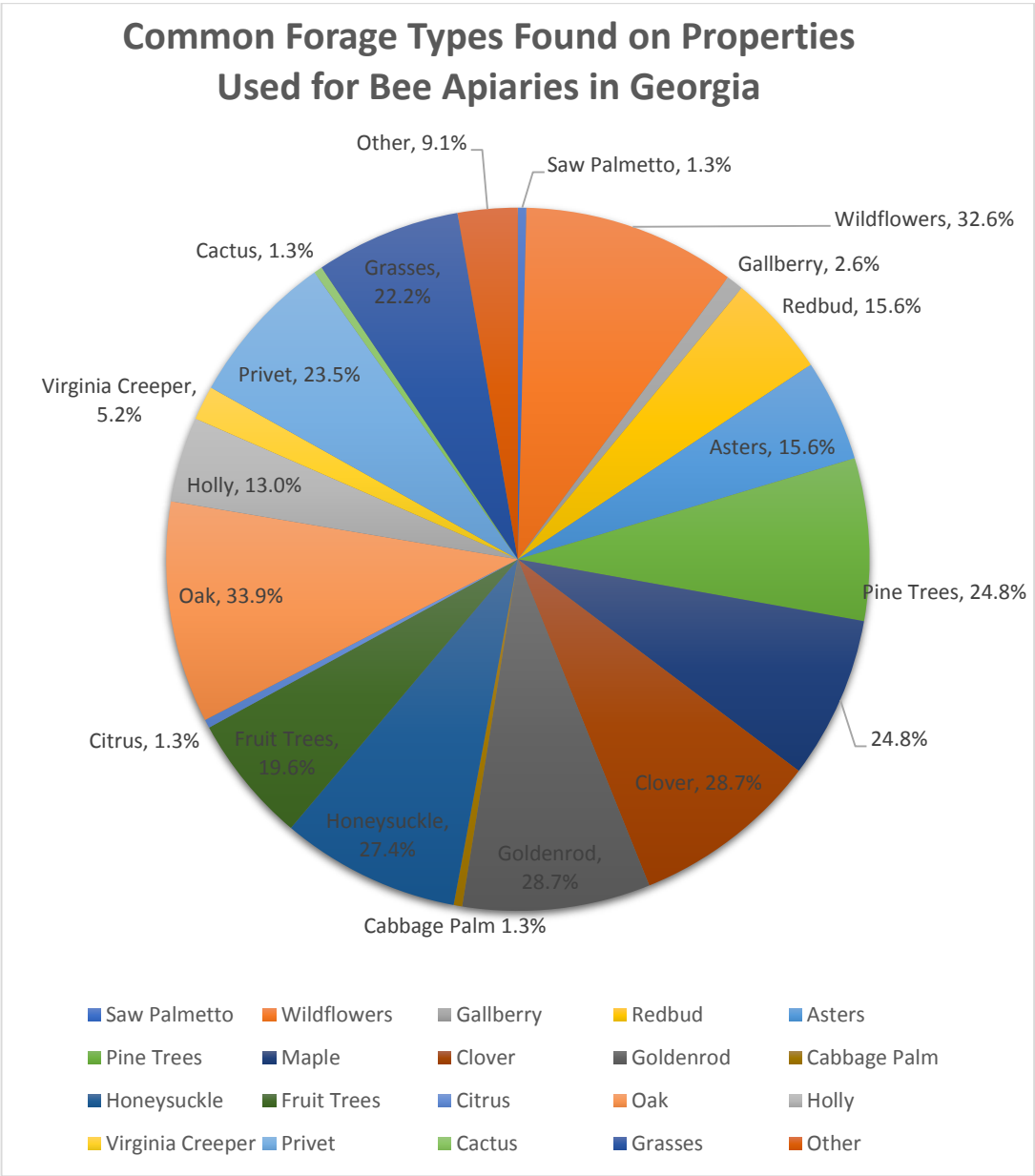
■ Percent of Beekeepers that require less than 1 acre per hive  
■ Percent of Beekeepers requiring more than 1 acre per hive

Common Property Types Used for Bee Apiaries in Georgia



# NAPPC National Beekeeper Forage Survey

Georgia (continued)



# NAPPC National Beekeeper Forage Survey

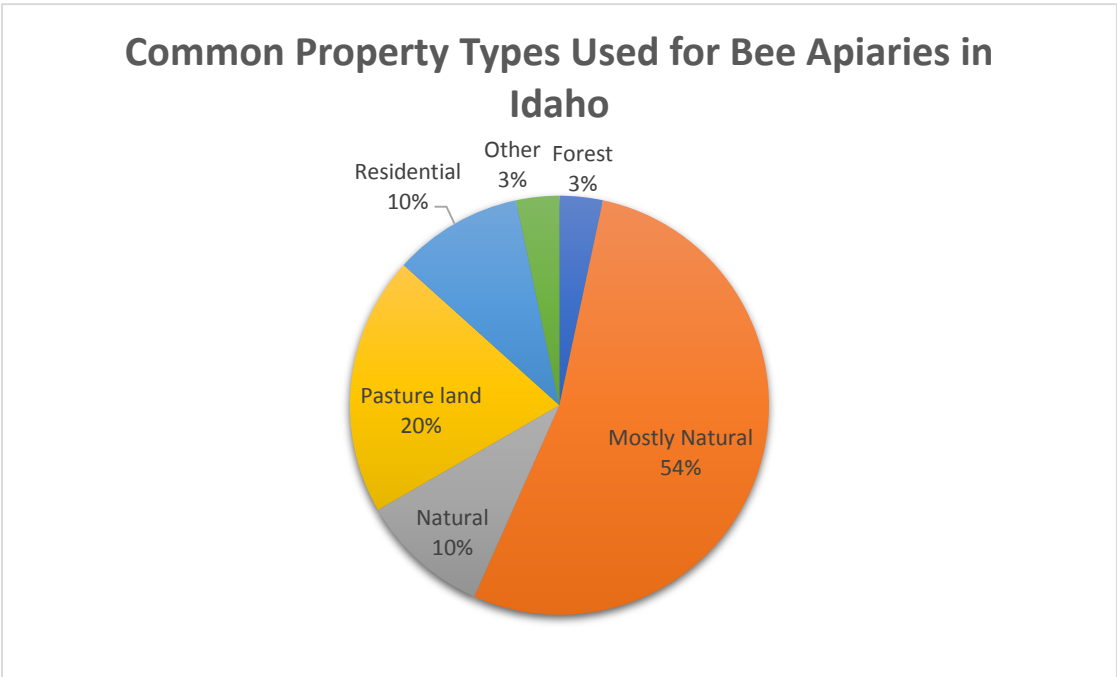
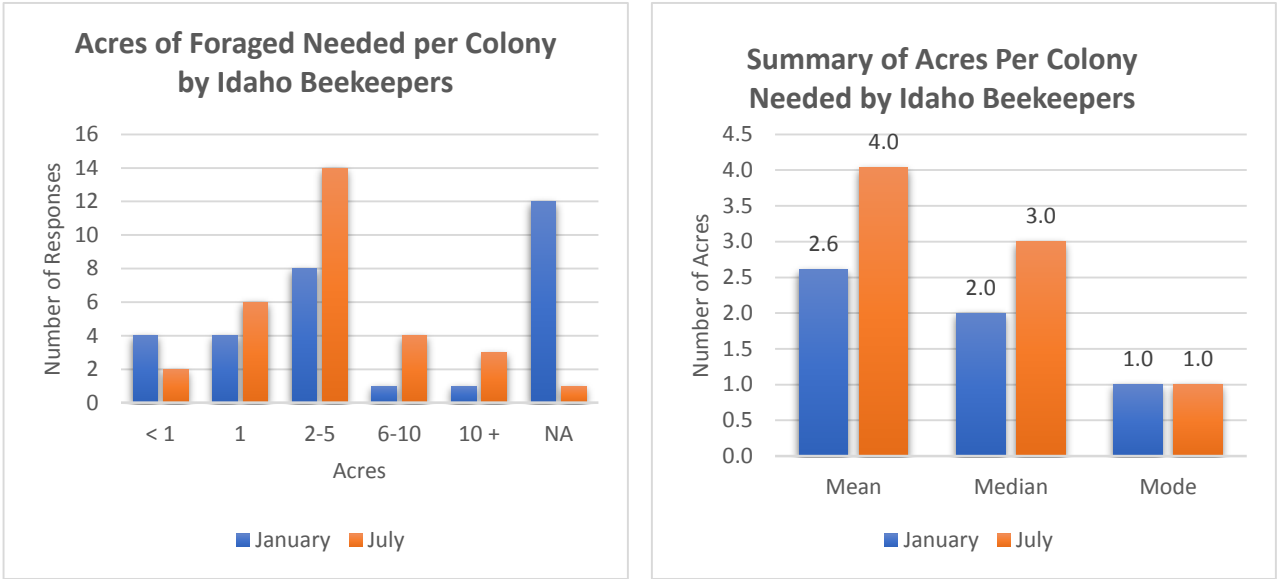
## Hawaii

No Data was available for Hawaii.

# NAPPC National Beekeeper Forage Survey

## Idaho

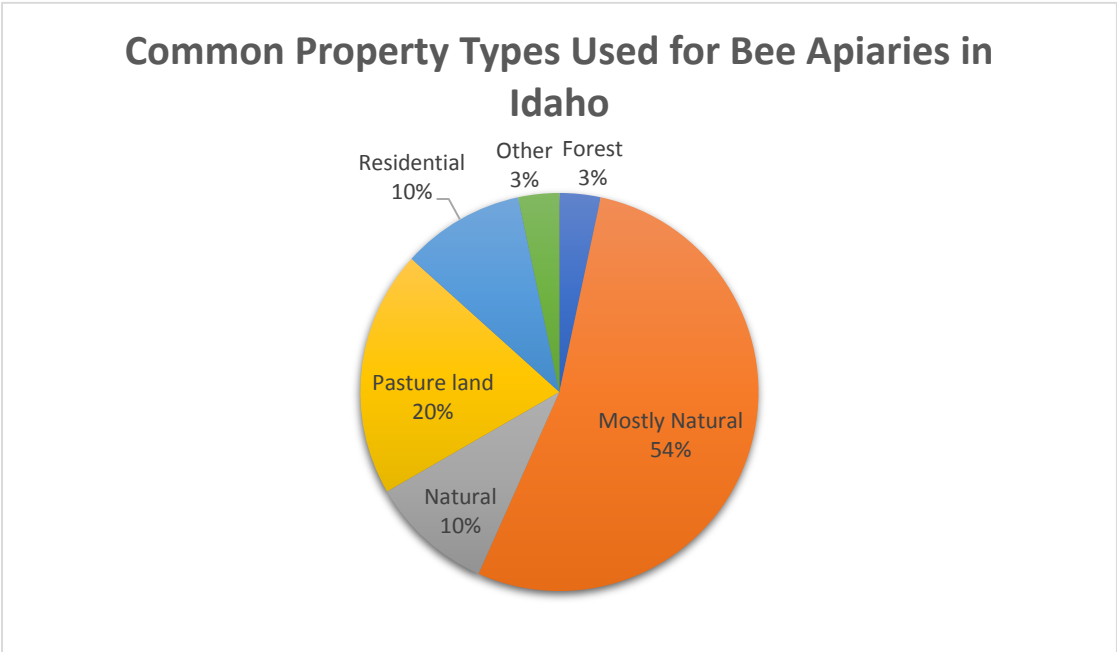
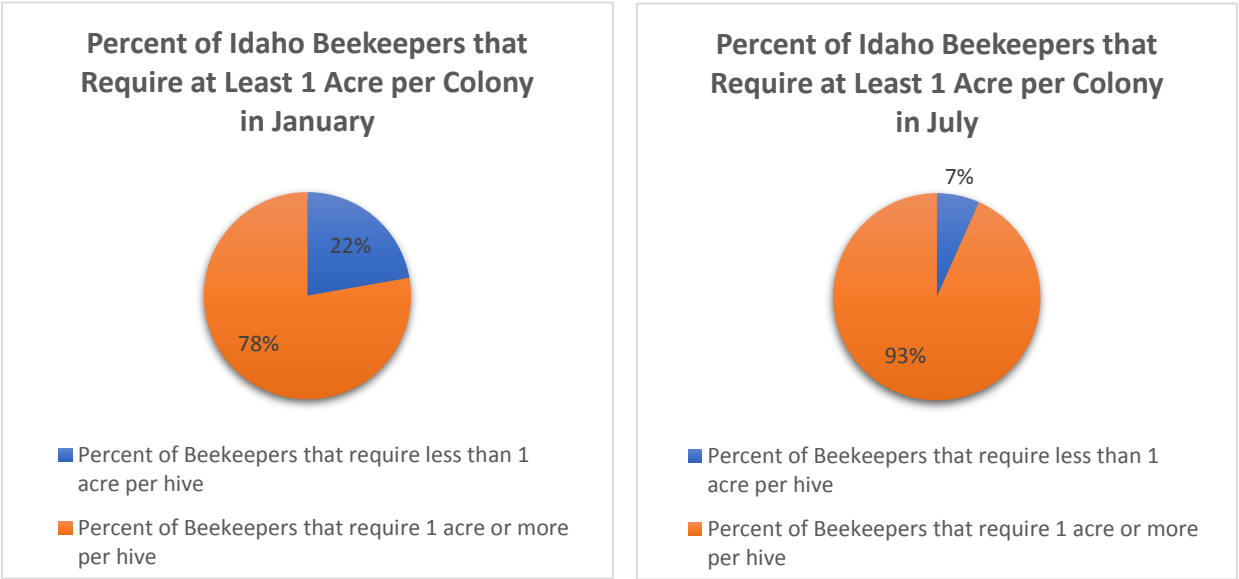
In Idaho, a total of 30 beekeepers responded to the survey.





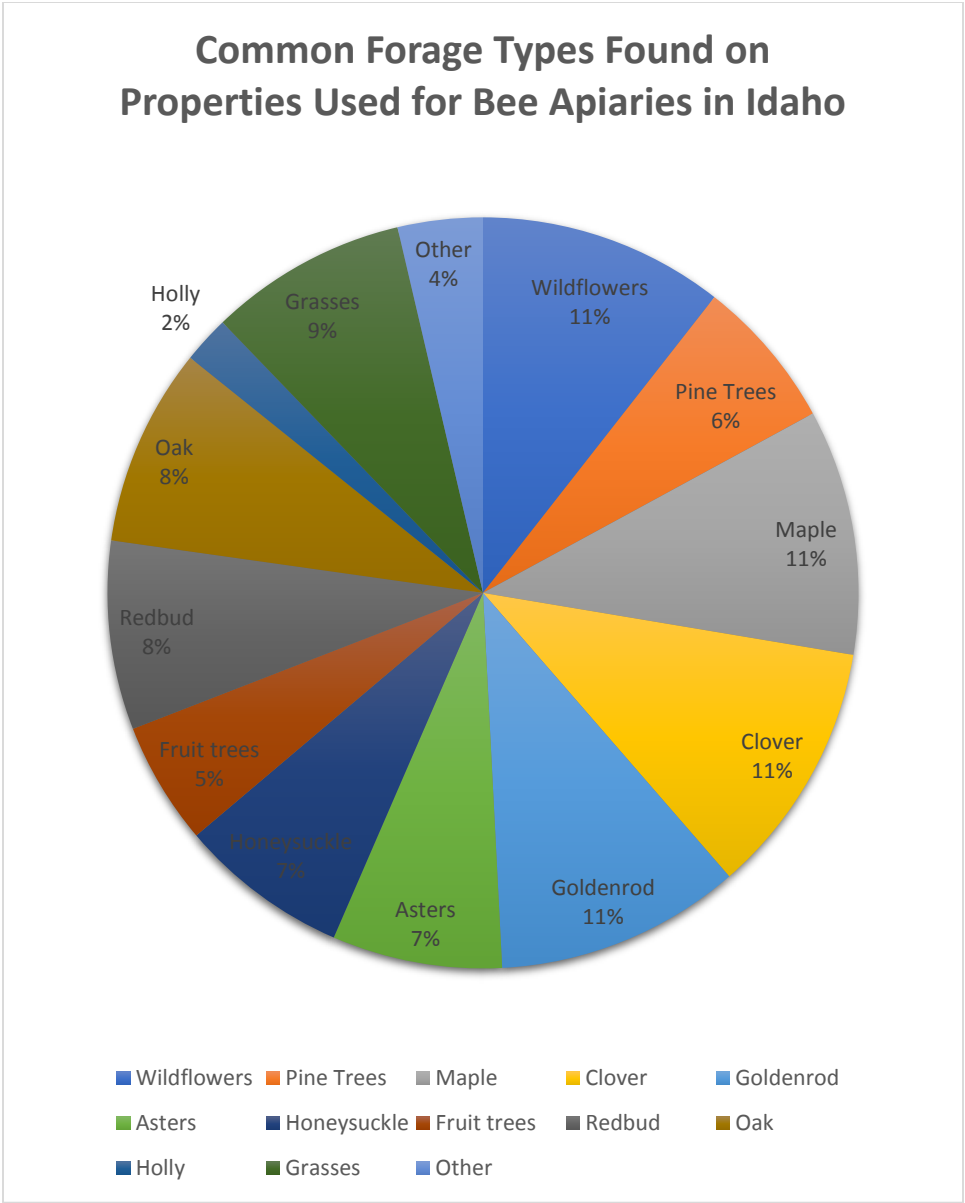
# NAPPC National Beekeeper Forage Survey

## Idaho (continued)



# NAPPC National Beekeeper Forage Survey

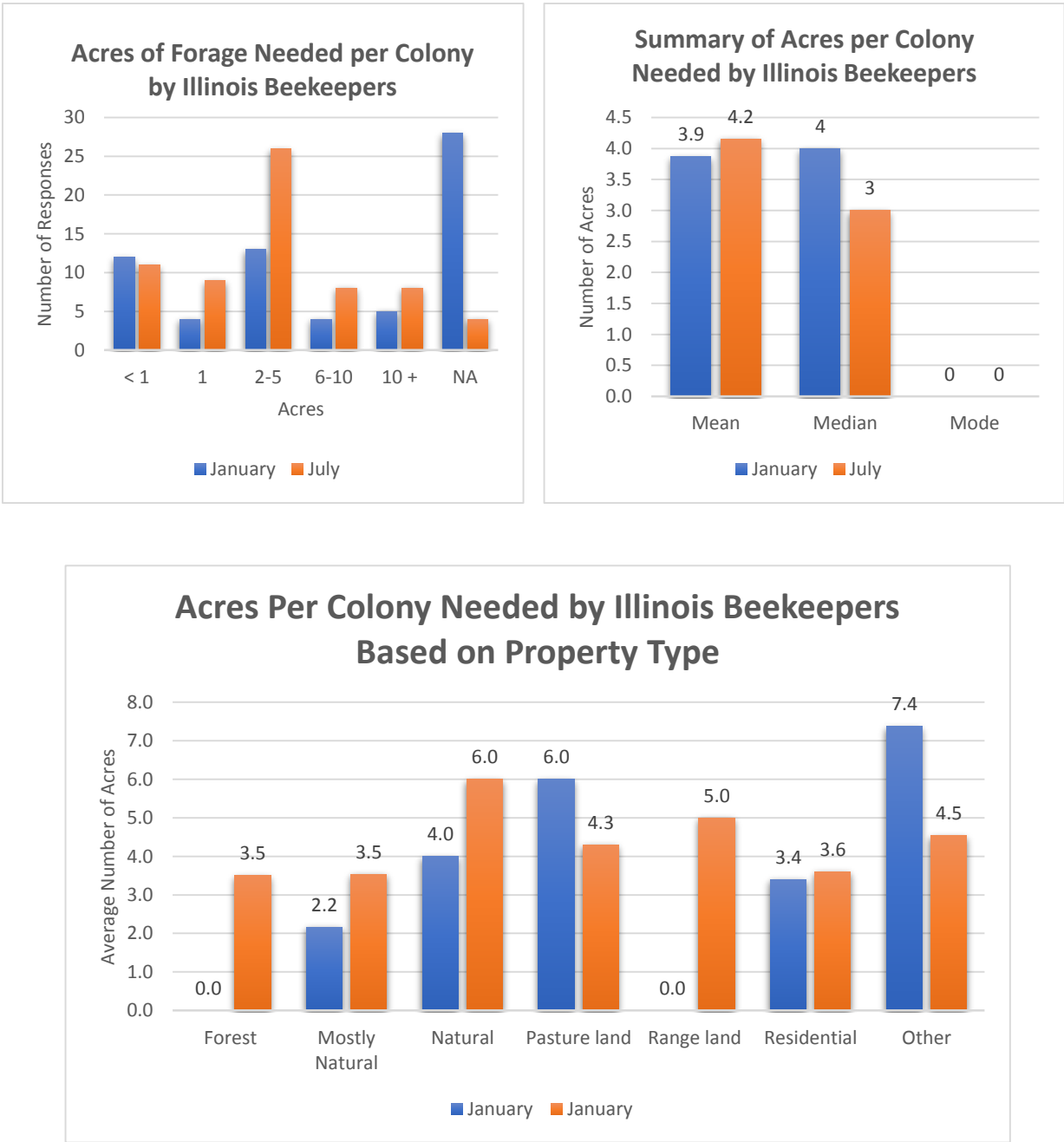
Idaho (continued)



# NAPPC National Beekeeper Forage Survey

## Illinois

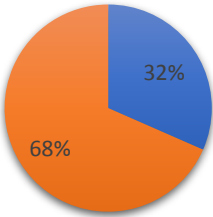
In Illinois, a total of 72 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

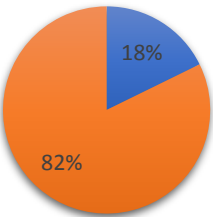
## Illinois (continued)

**Percent of Illinois Beekeepers that Require at Least 1 Acre per Colony in January**



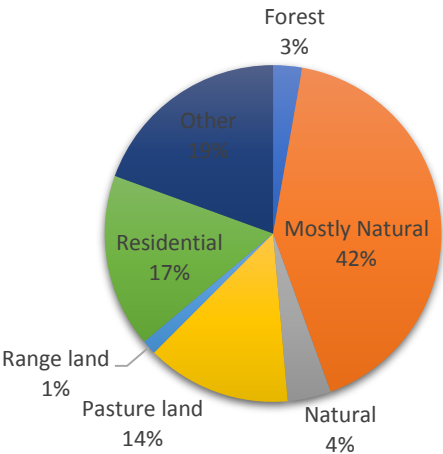
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

**Percent of Illinois Beekeepers that Require at Least 1 Acre per Colony in July**



- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

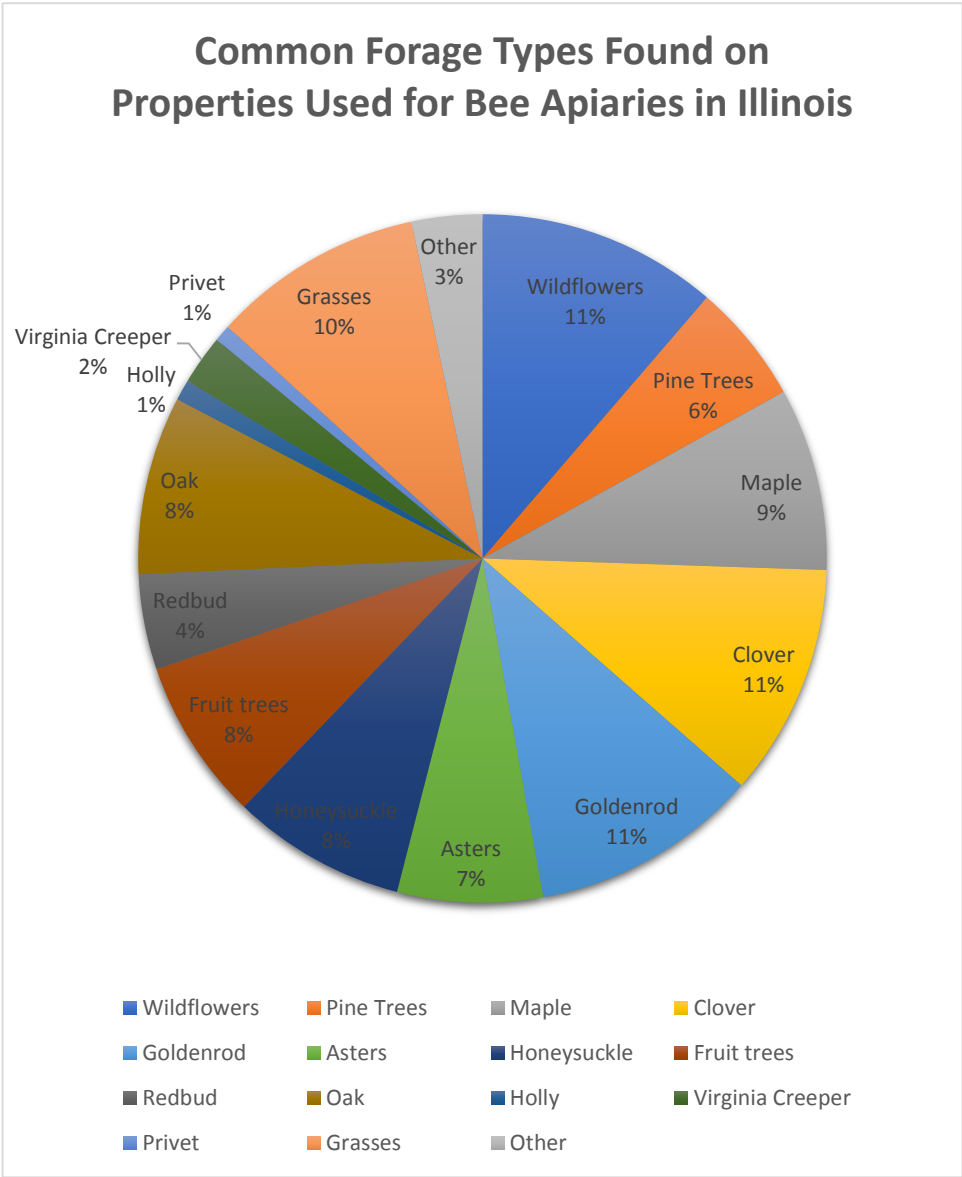
**Common Property types Used for Bee Apiaries in Illinois**



- Forest
- Mostly Natural
- Natural
- Pasture land
- Range land
- Residential
- Other

# NAPPC National Beekeeper Forage Survey

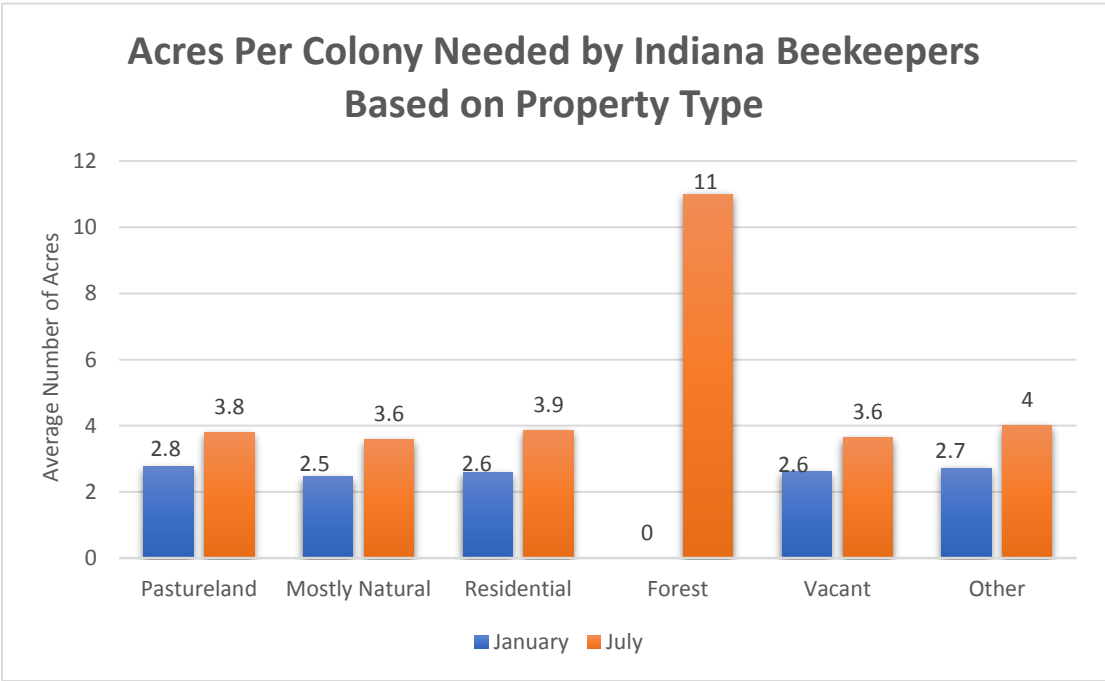
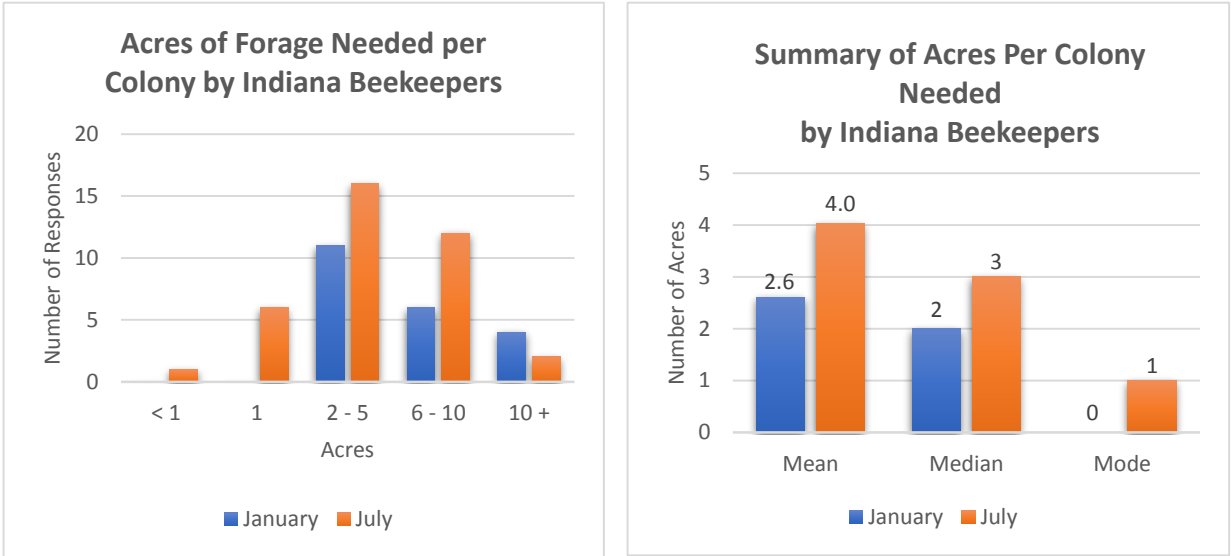
Illinois (continued)



# NAPPC National Beekeeper Forage Survey

## Indiana

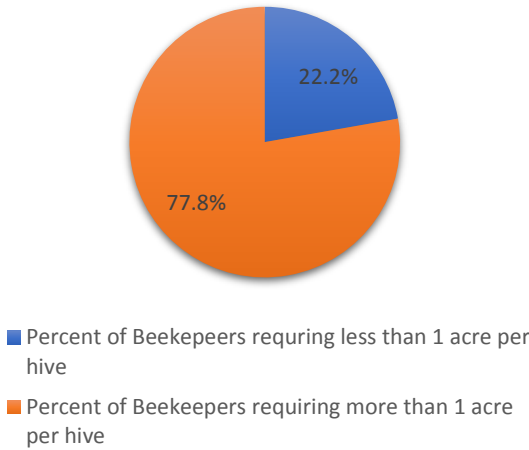
In Indiana, a total of 31 beekeepers responded to the survey.



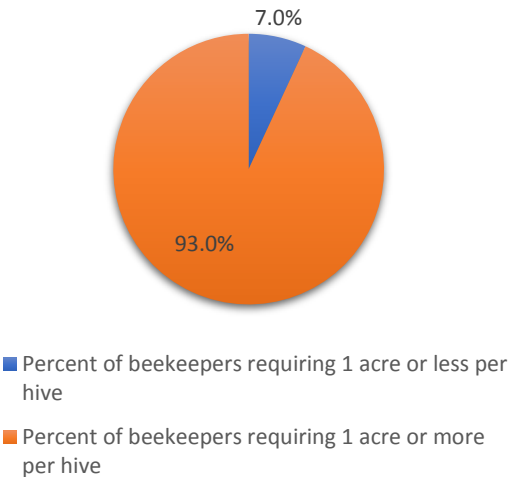
# NAPPC National Beekeeper Forage Survey

## Indiana (continued)

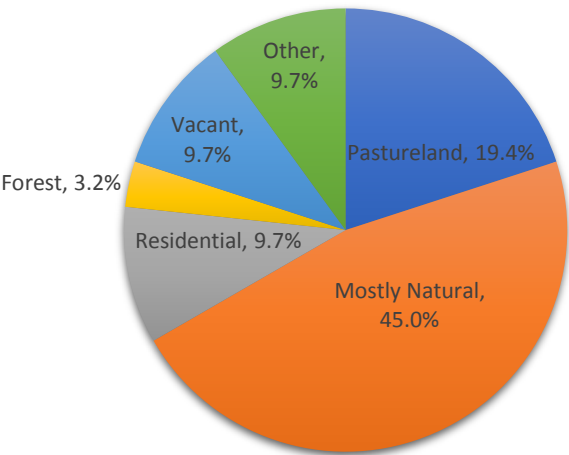
**Percent of Indiana Beekeepers that Require at Least 1 Acre per Colony in January**



**Percent of Indiana Beekeepers that Require at Least 1 Acre per Colony in July**

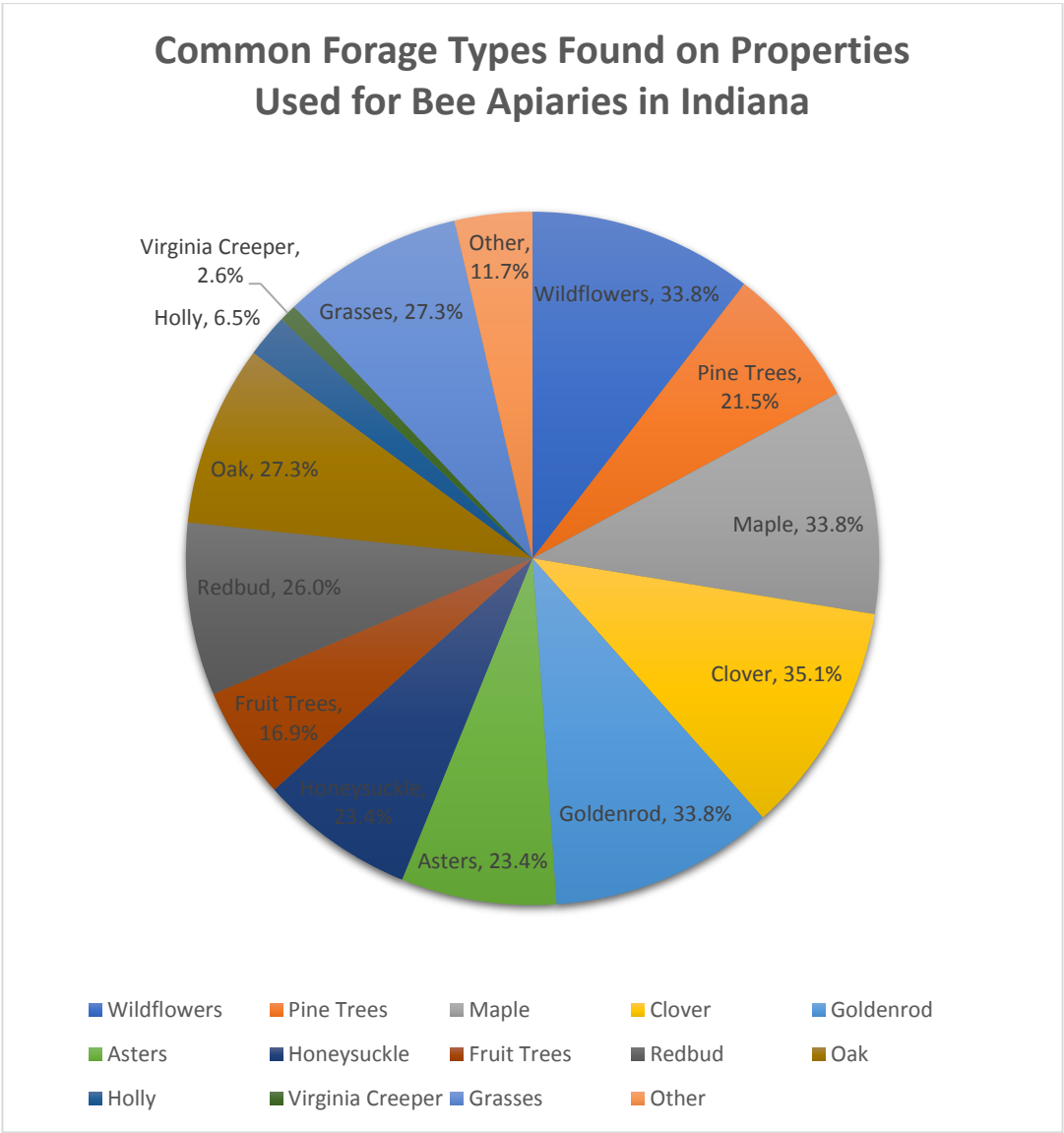


**Common Property Types Used for Bee Apiaries in Indiana**



# NAPPC National Beekeeper Forage Survey

Indiana (continued)





# NAPPC National Beekeeper Forage Survey

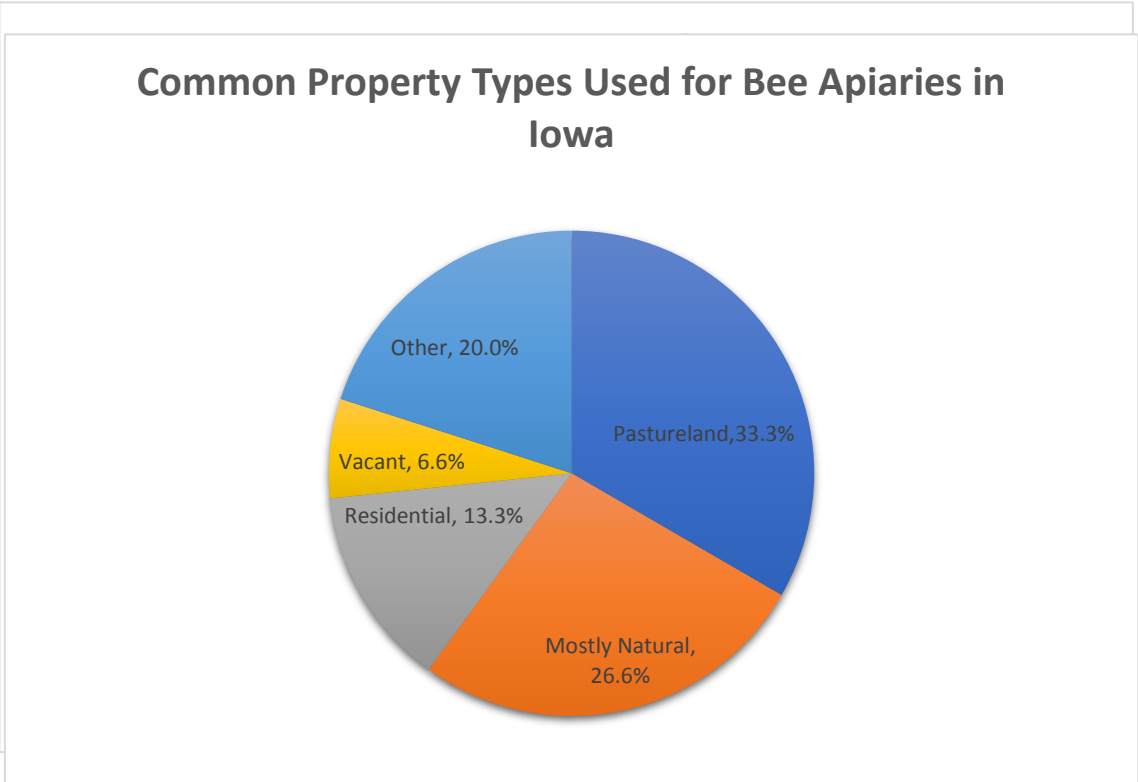
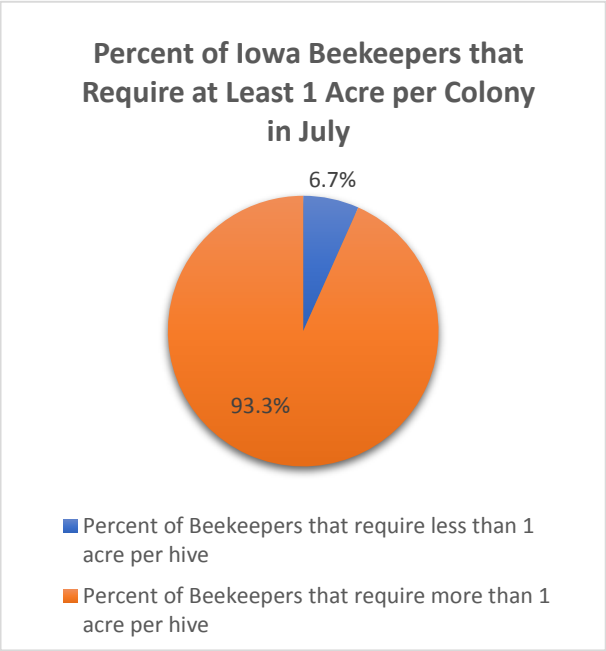
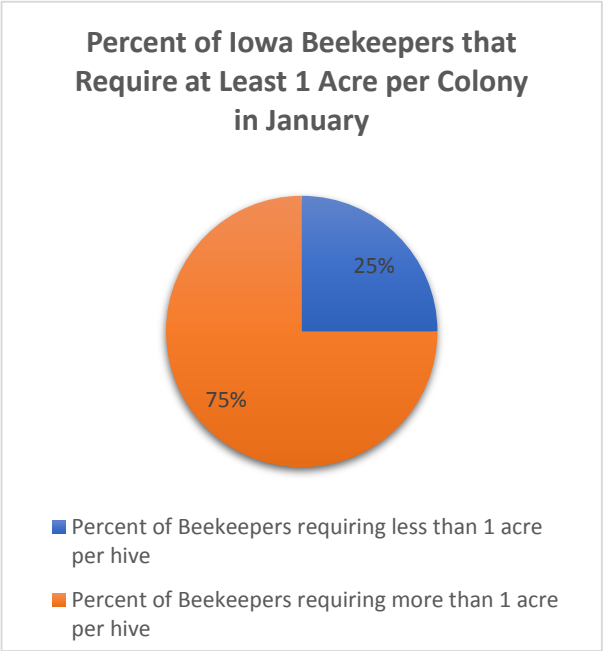
## Iowa

In Iowa, a total of 30 beekeepers responded to the survey.



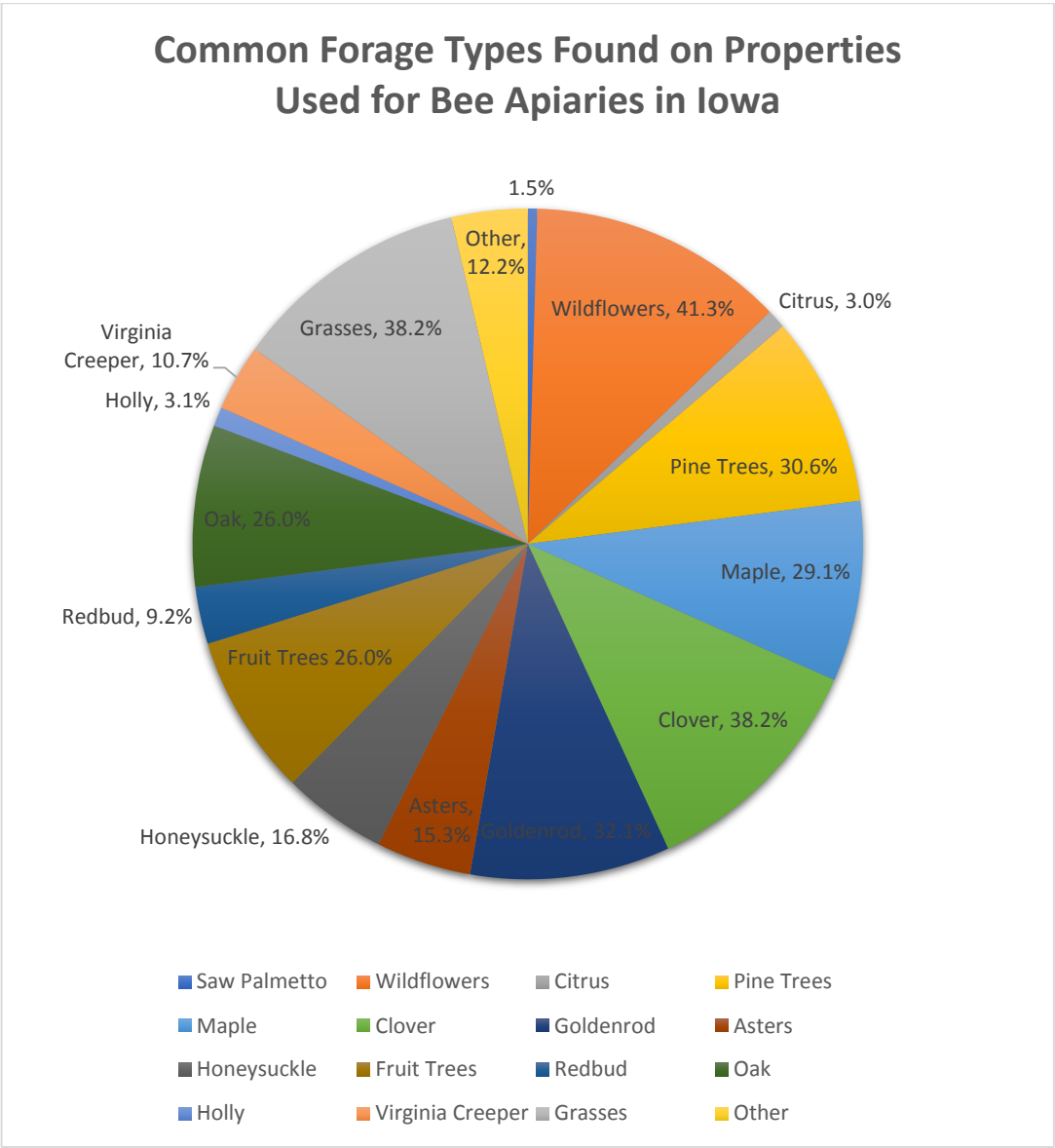
# NAPPC National Beekeeper Forage Survey

Iowa (continued)



# NAPPC National Beekeeper Forage Survey

Iowa (continued)



# NAPPC National Beekeeper Forage Survey

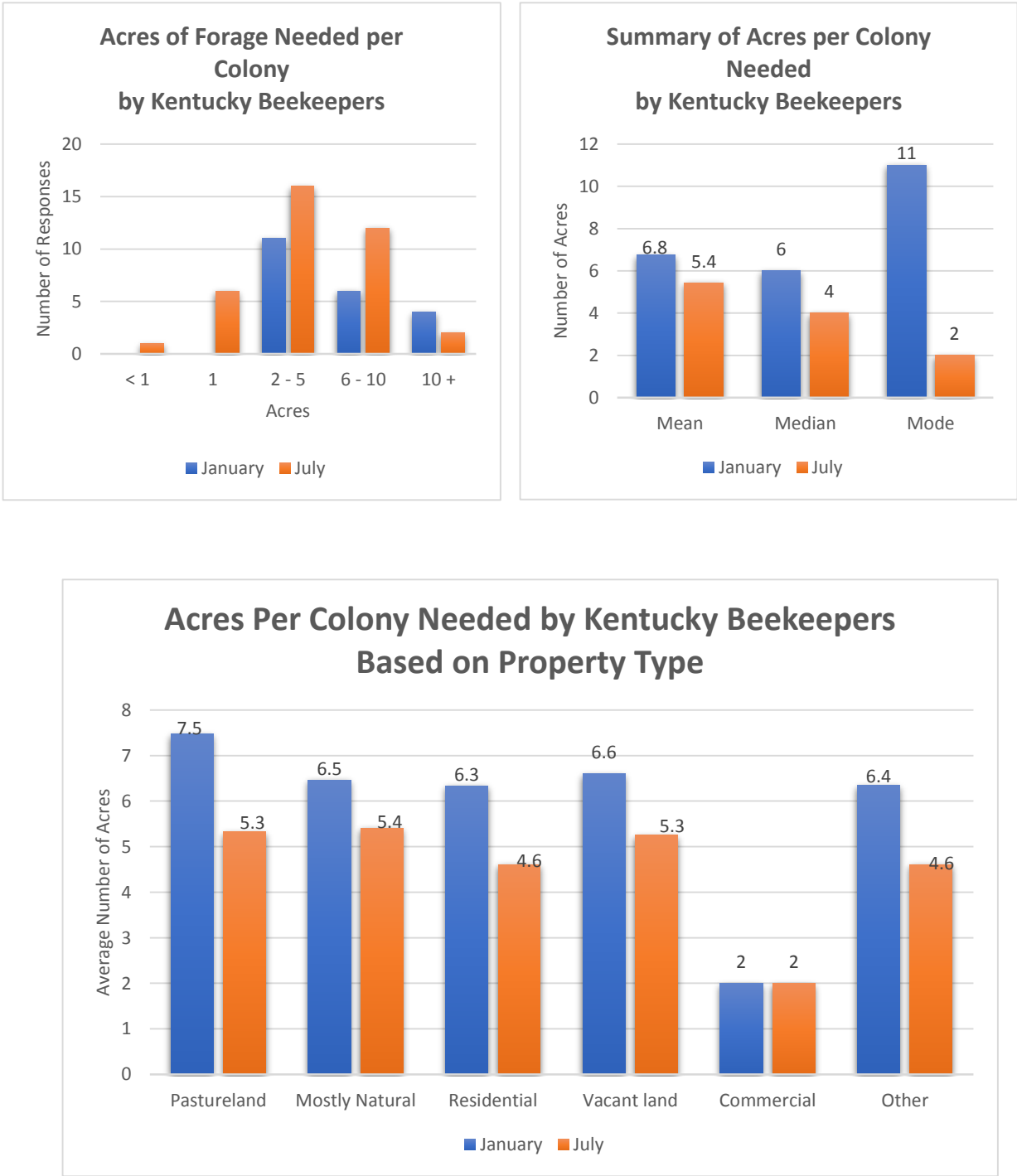
## Kansas

No Data was available for Kansas.

# NAPPC National Beekeeper Forage Survey

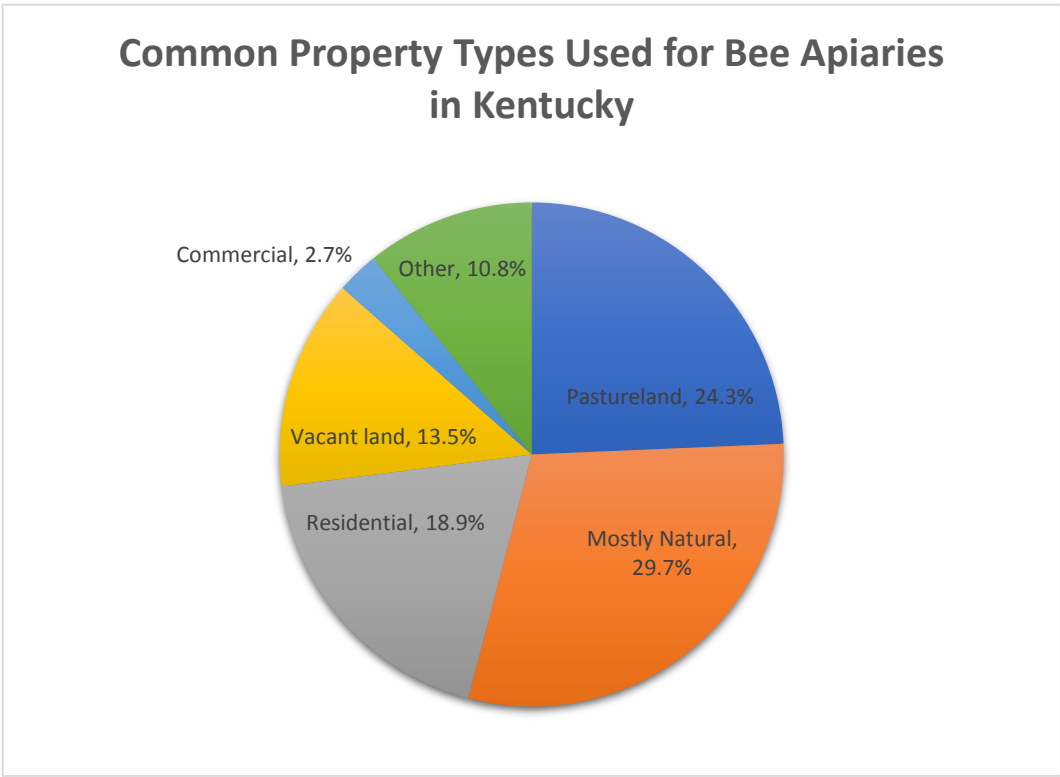
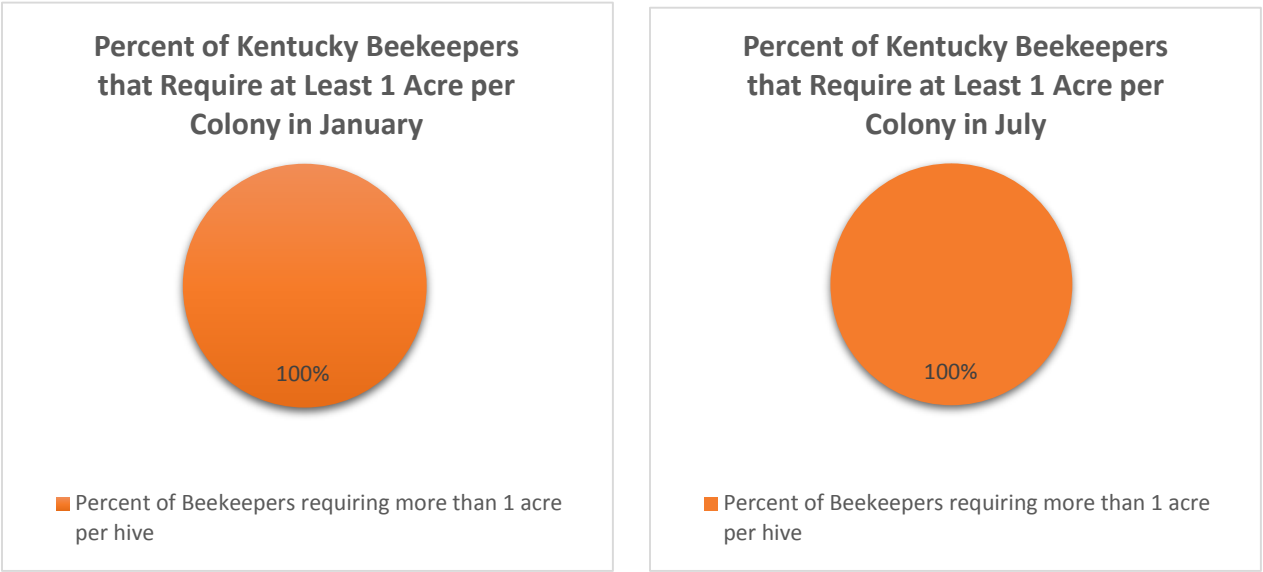
## Kentucky

In Kentucky, a total of 37 beekeepers responded to the survey.



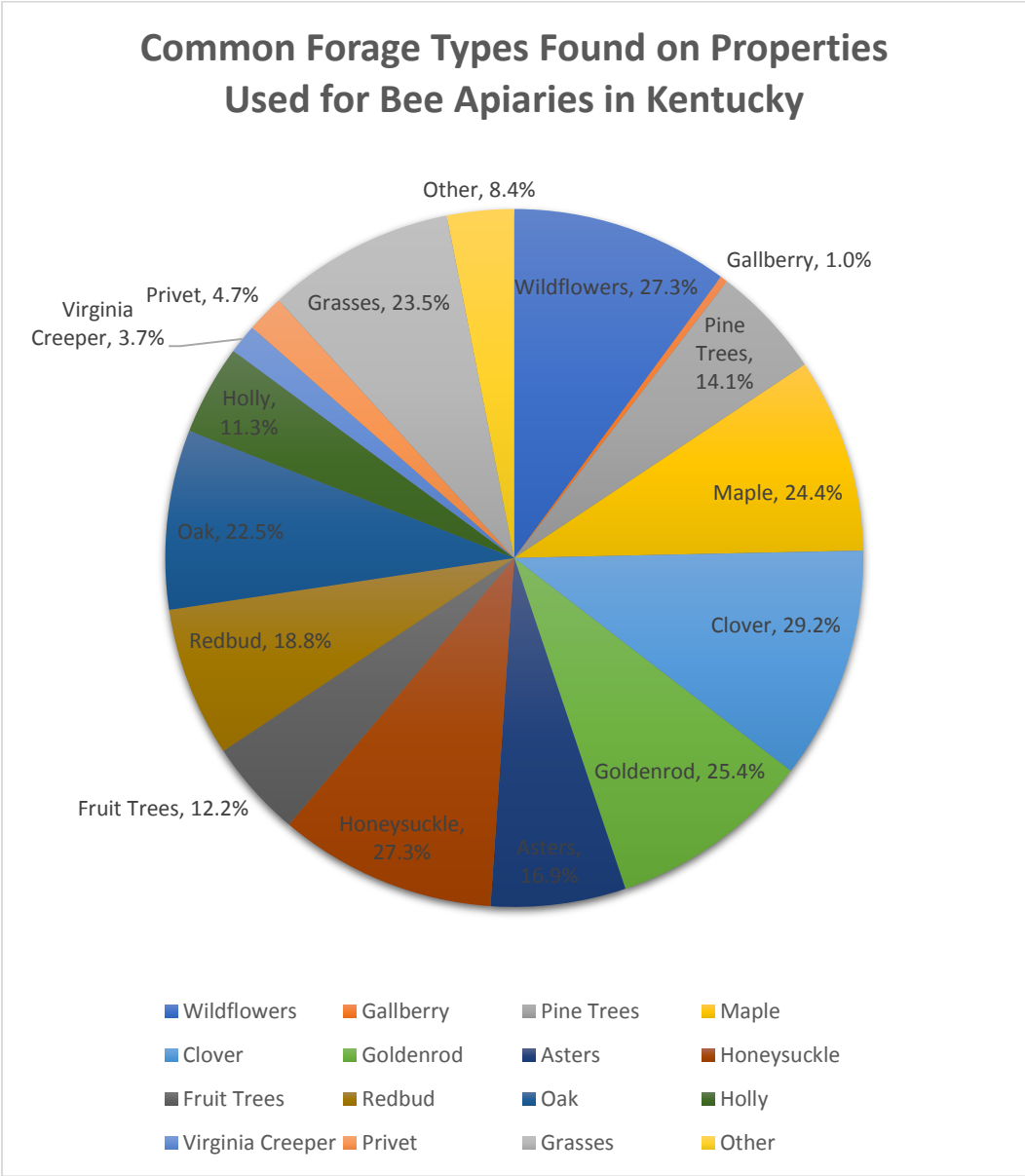
# NAPPC National Beekeeper Forage Survey

## Kentucky (continued)



# NAPPC National Beekeeper Forage Survey

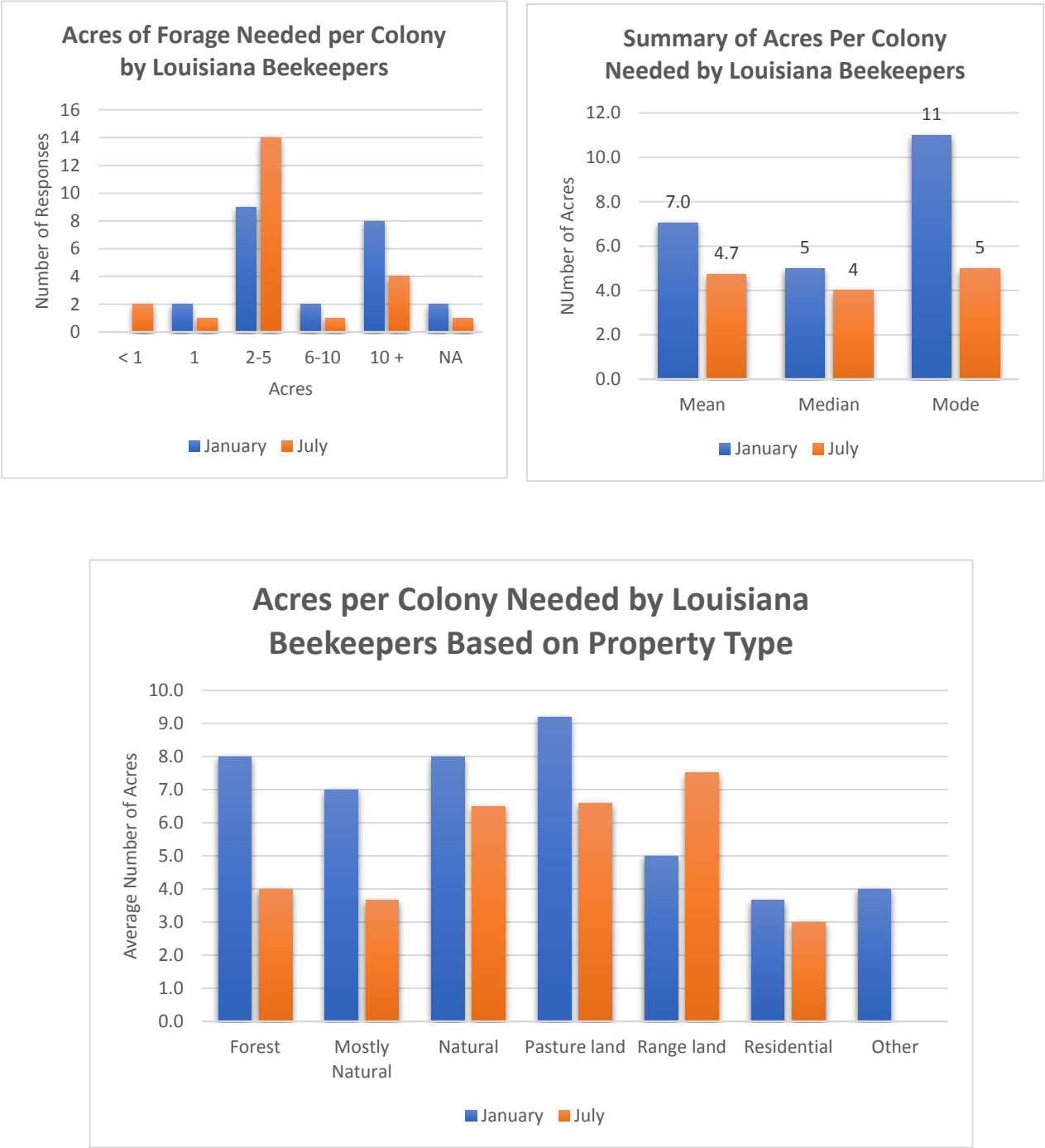
Kentucky (continued)



# NAPPC National Beekeeper Forage Survey

## Louisiana

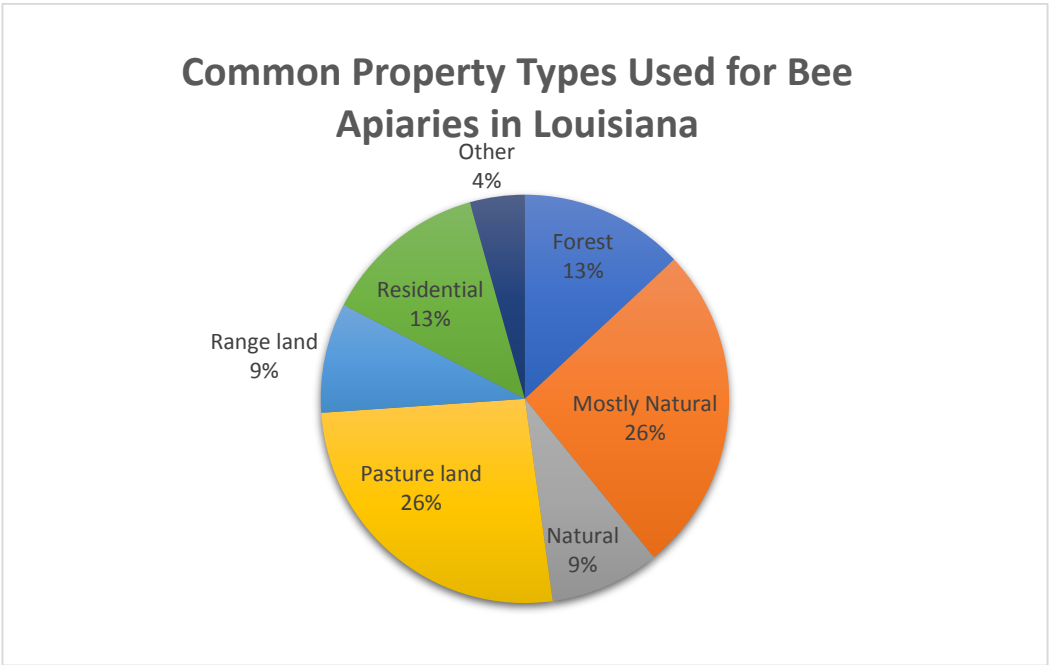
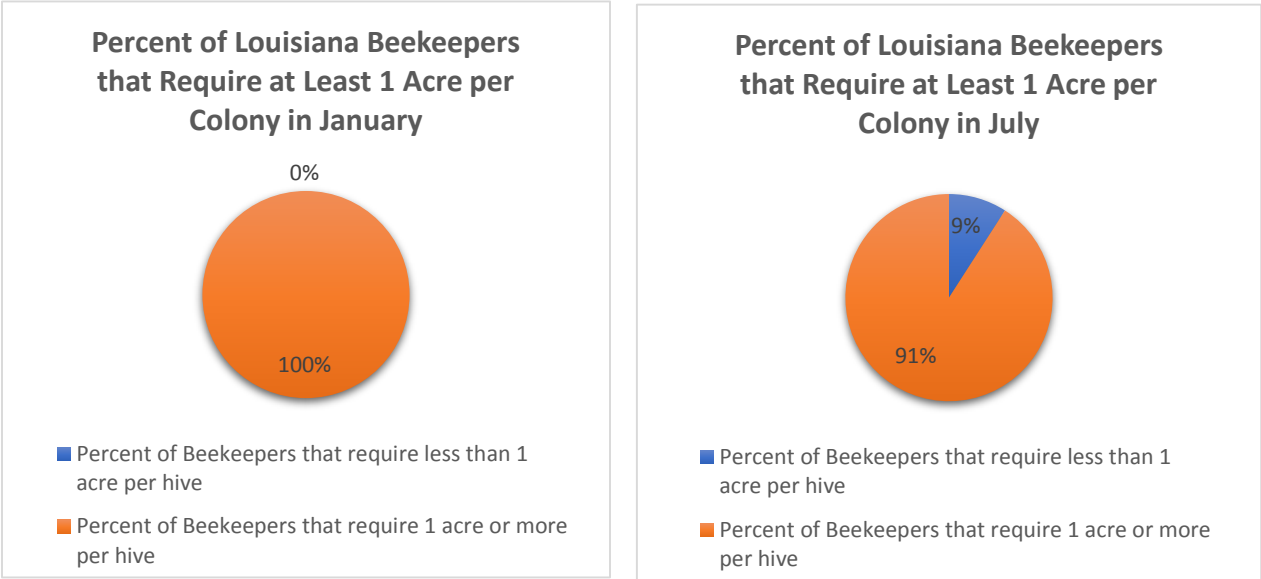
In Louisiana, a total of 23 beekeepers responded to the survey.





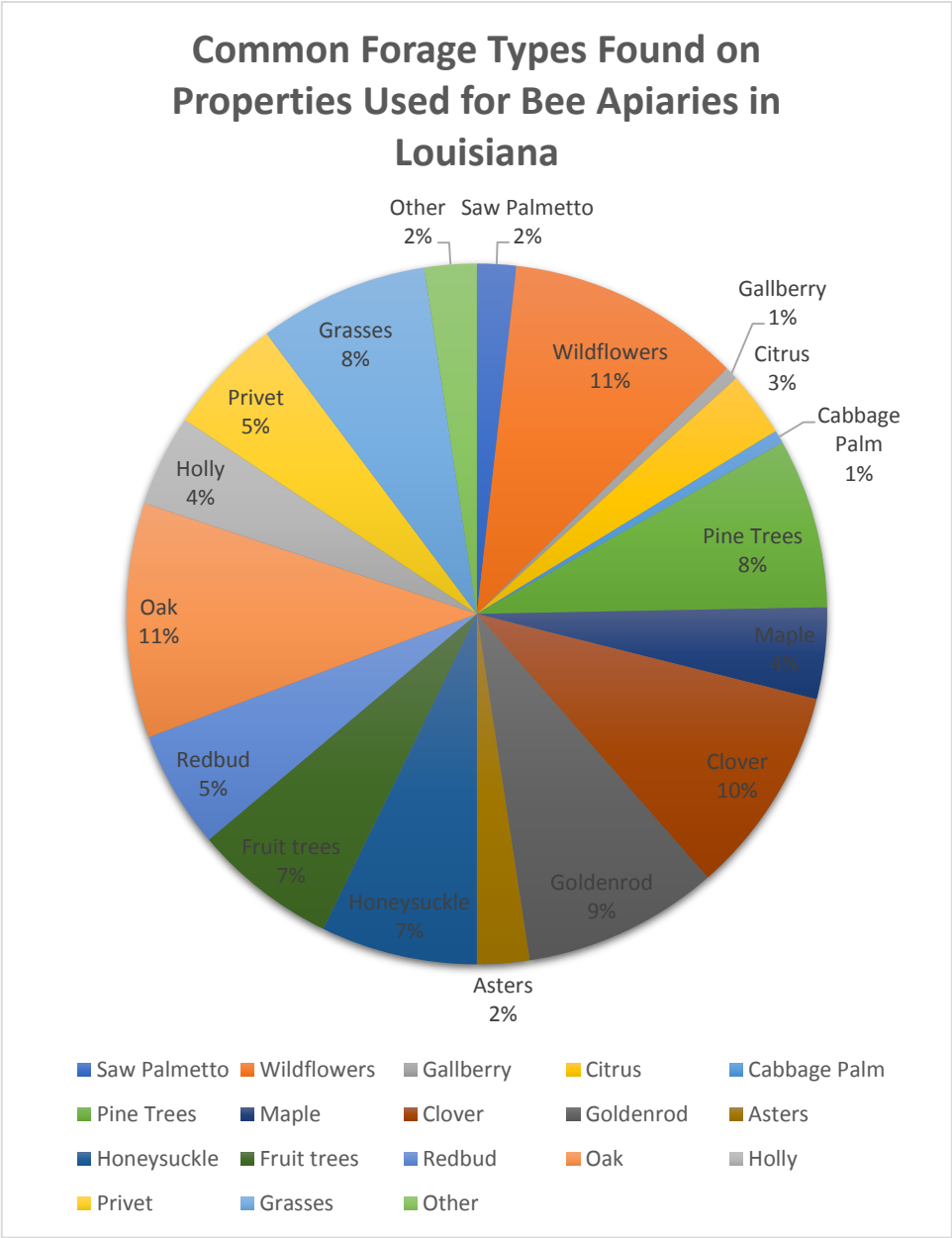
# NAPPC National Beekeeper Forage Survey

## Louisiana (continued)



# NAPPC National Beekeeper Forage Survey

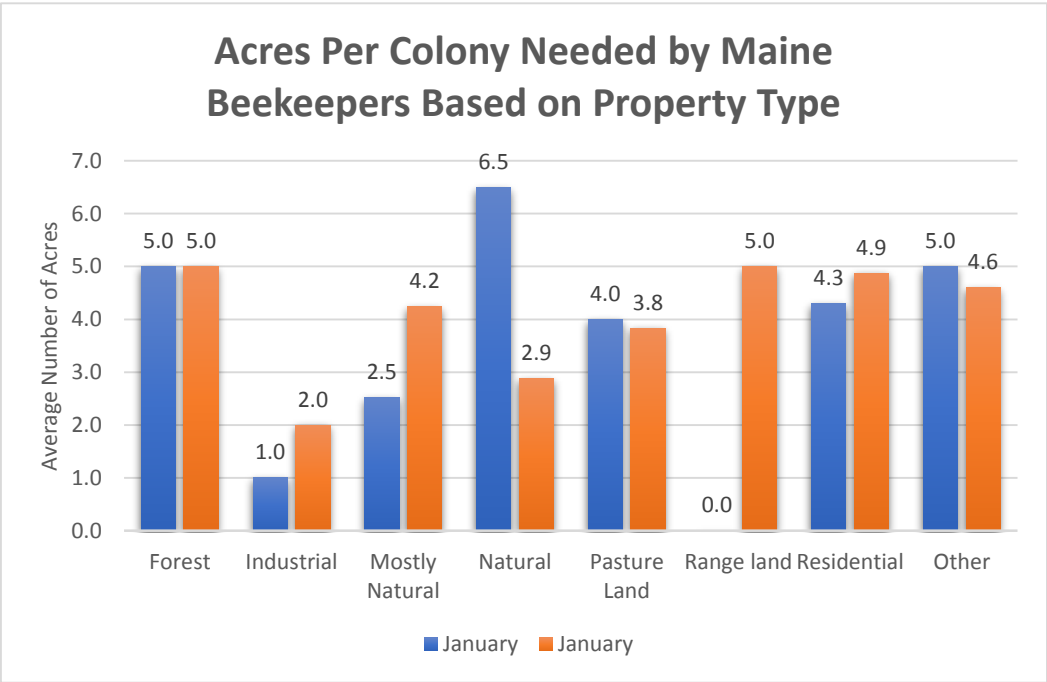
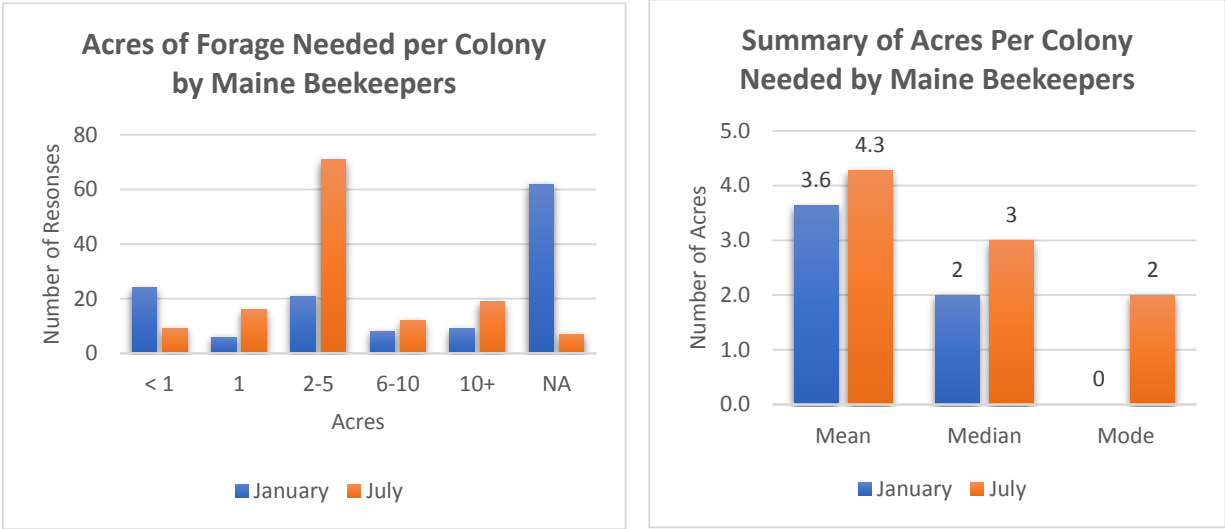
Louisiana (continued)



# NAPPC National Beekeeper Forage Survey

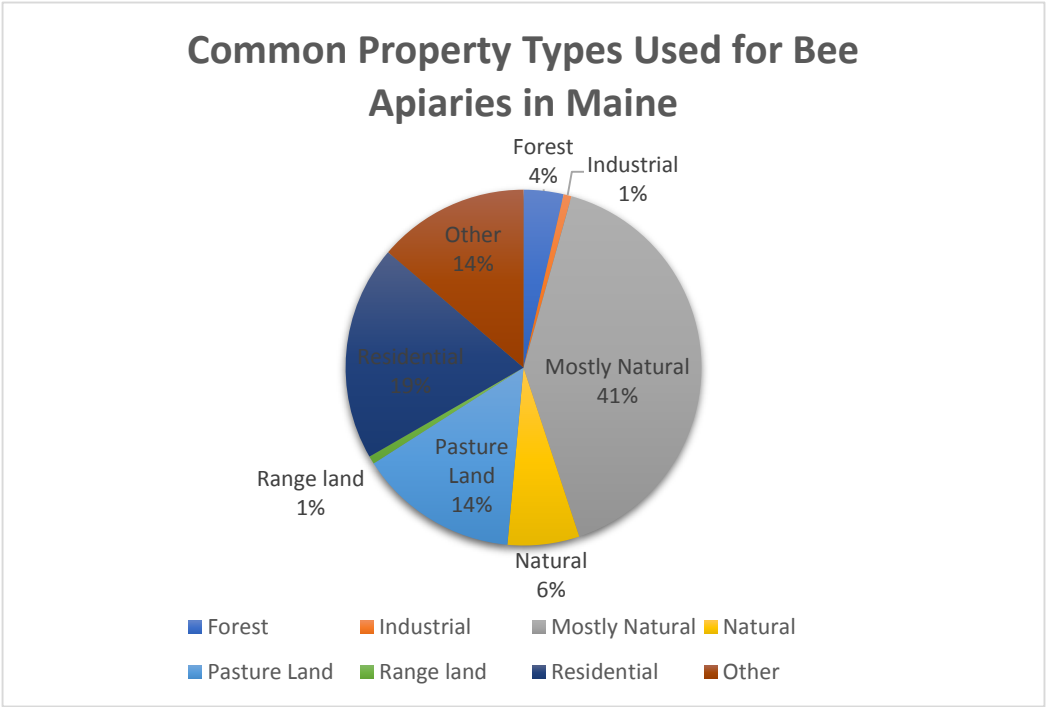
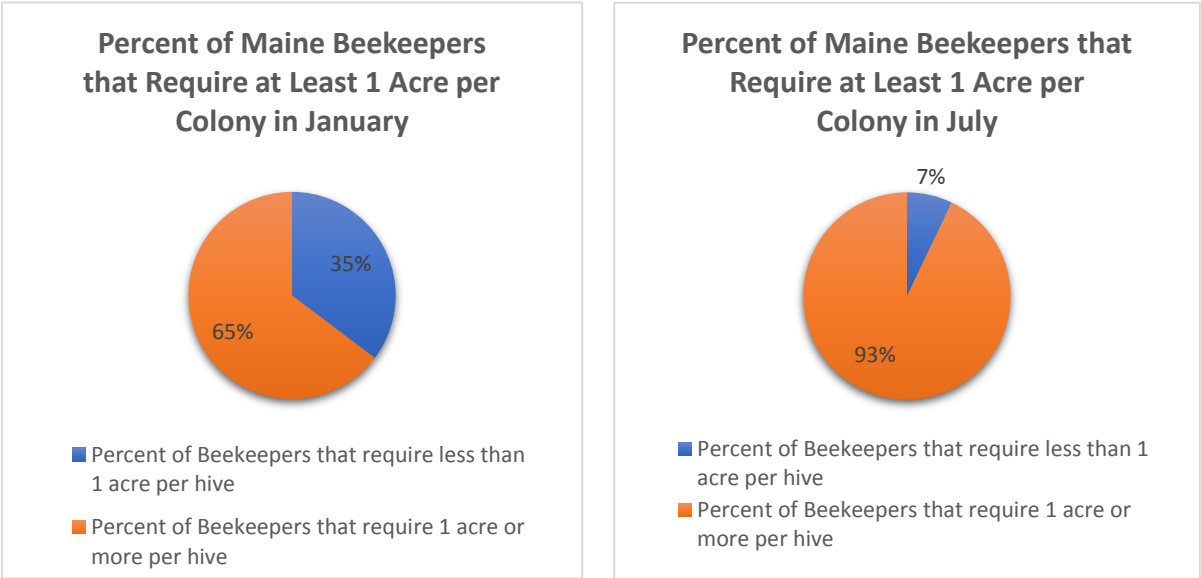
## Maine

In Maine, a total of 138 beekeepers responded to the survey.



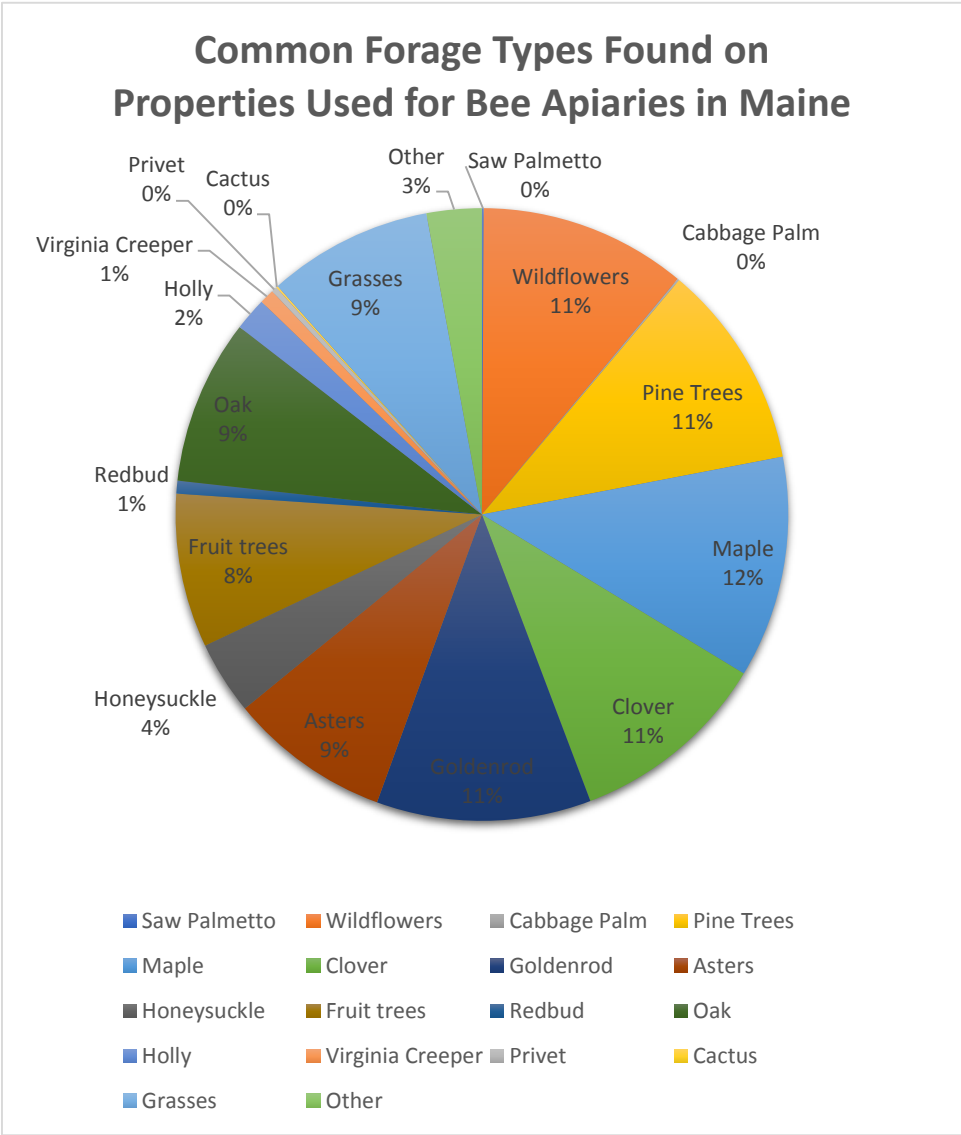
# NAPPC National Beekeeper Forage Survey

## Maine (continued)



# NAPPC National Beekeeper Forage Survey

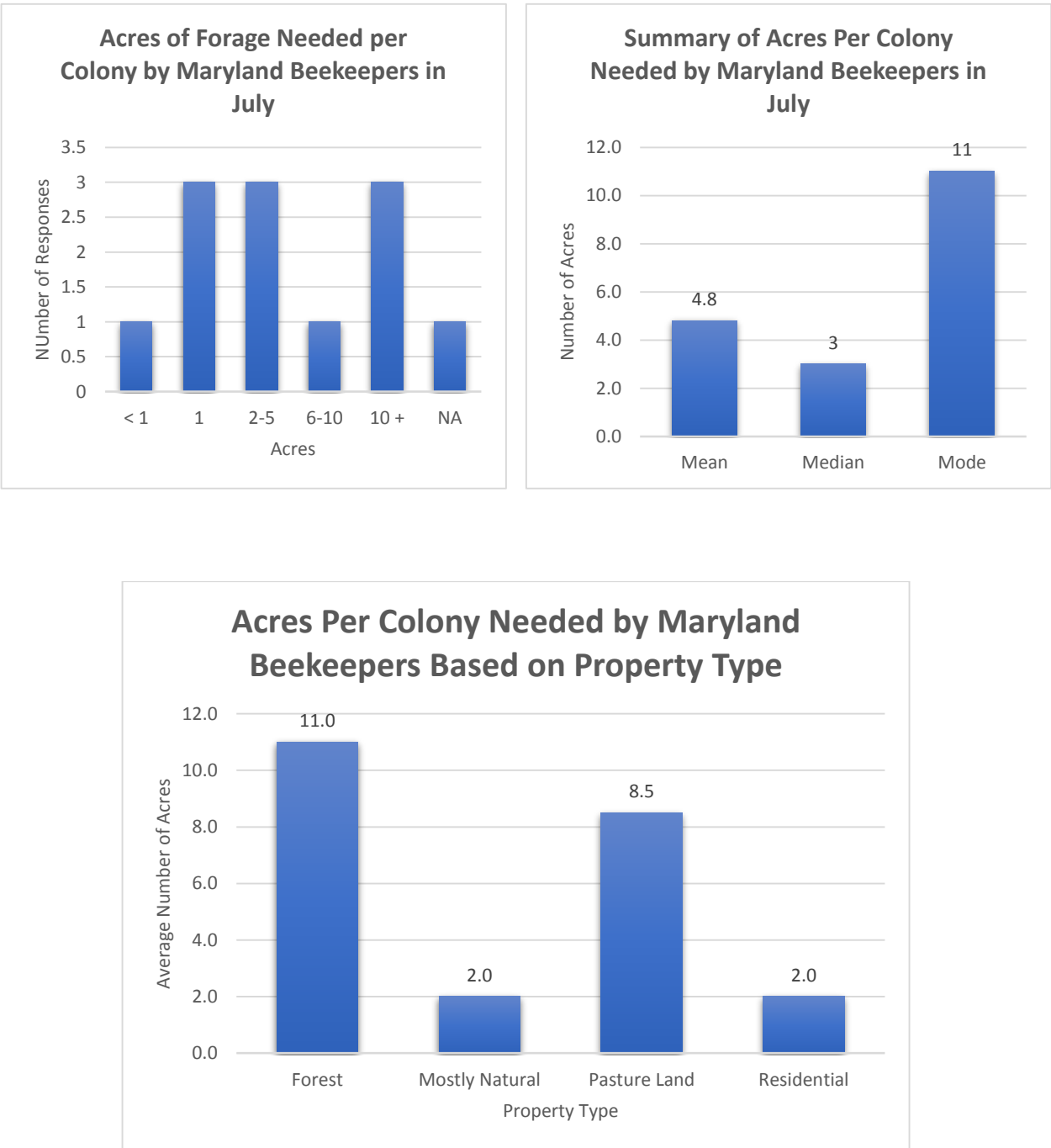
Maine (continued)



# NAPPC National Beekeeper Forage Survey

## Maryland

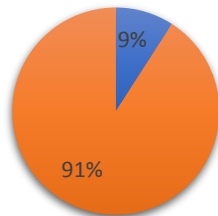
In Maryland, a total of 13 beekeepers responded to the survey. No data was available for January because bees are typically not active in cold weather.



# NAPPC National Beekeeper Forage Survey

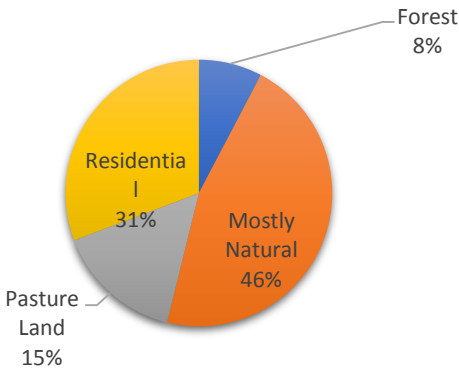
## Maryland (continued)

**Percent of Maryland Beekeepers that Require at Least 1 Acre per Colony in July**



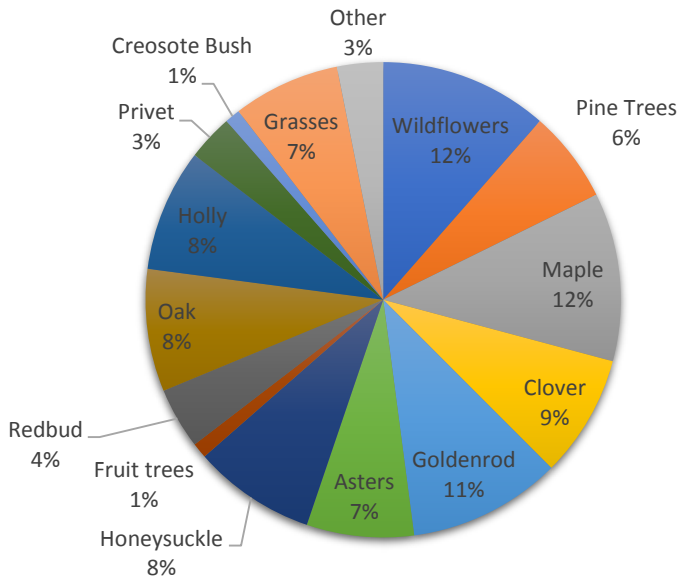
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

**Common Property Types Used for Bee Apiaries in Maryland**



- Forest
- Mostly Natural
- Pasture Land
- Residential

**Common Forage Types Found on Properties Used for Bee Apiaries in Maryland**

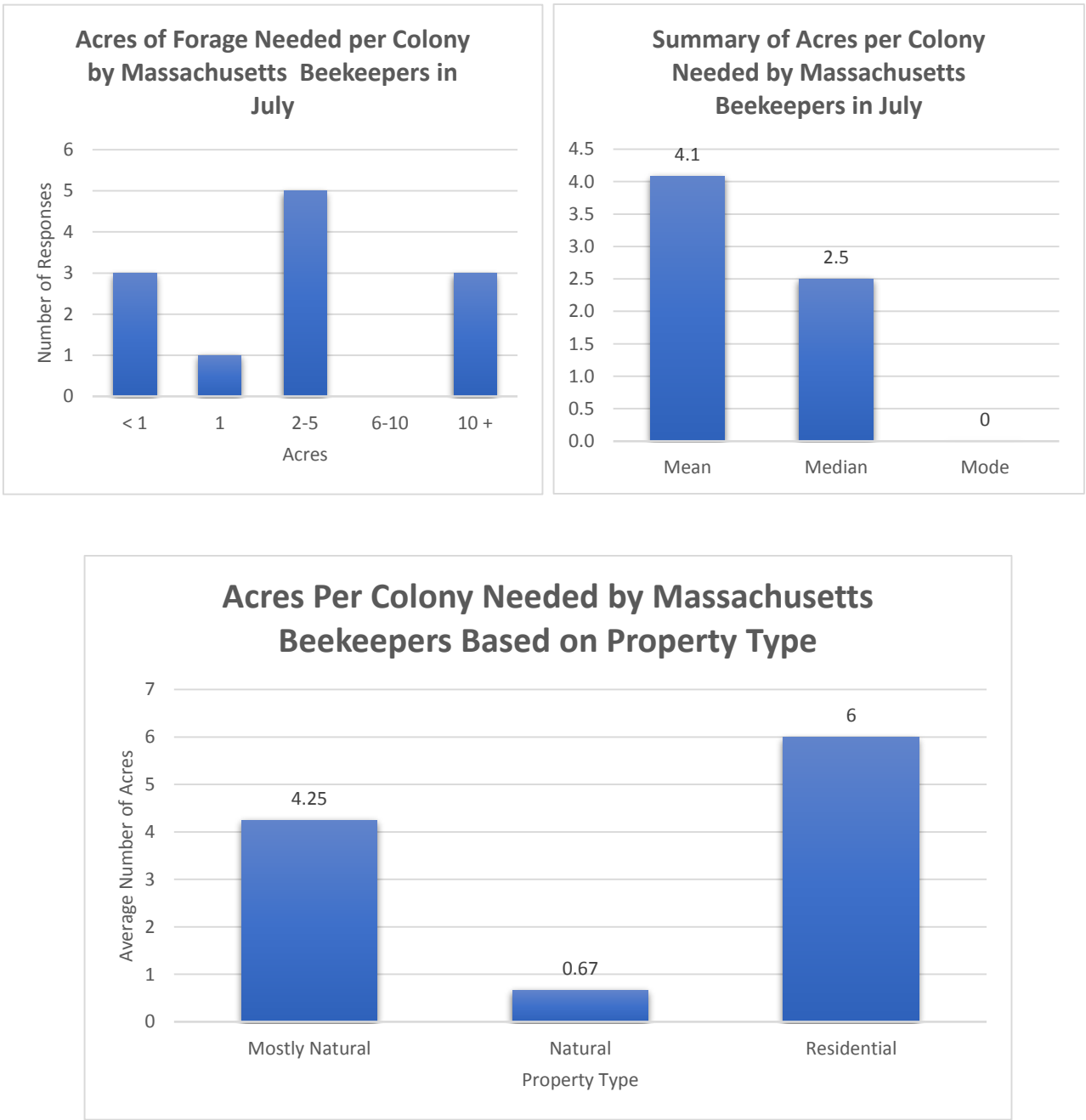


- Wildflowers
- Pine Trees
- Maple
- Clover
- Goldenrod
- Asters
- Honeysuckle
- Fruit trees
- Redbud
- Oak
- Holly
- Privet
- Creosote Bush
- Grasses
- Other

# NAPPC National Beekeeper Forage Survey

## Massachusetts

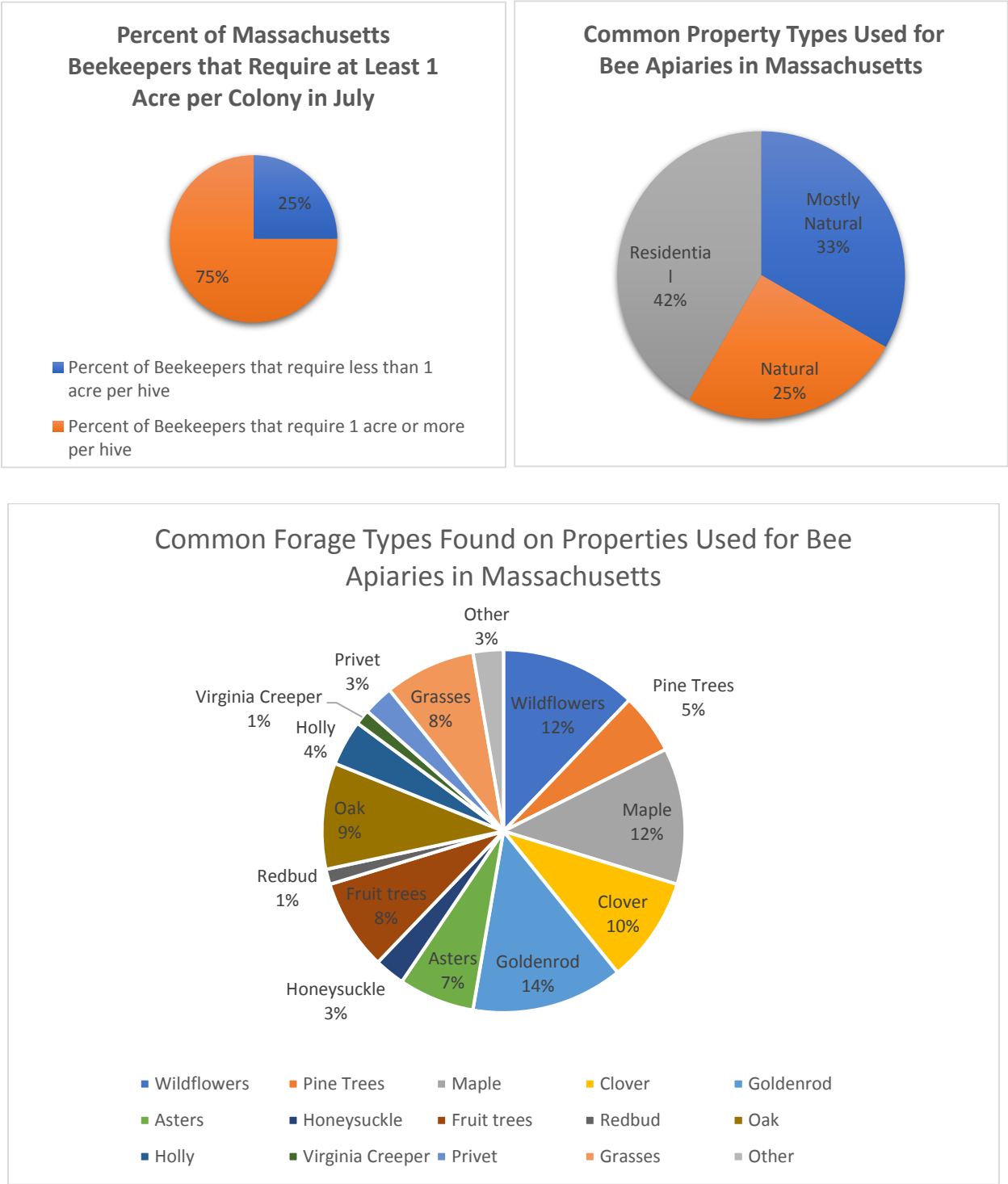
In Massachusetts, a total of 12 beekeepers responded to the survey. No data was available for January because bees are typically not active in cold weather.





# NAPPC National Beekeeper Forage Survey

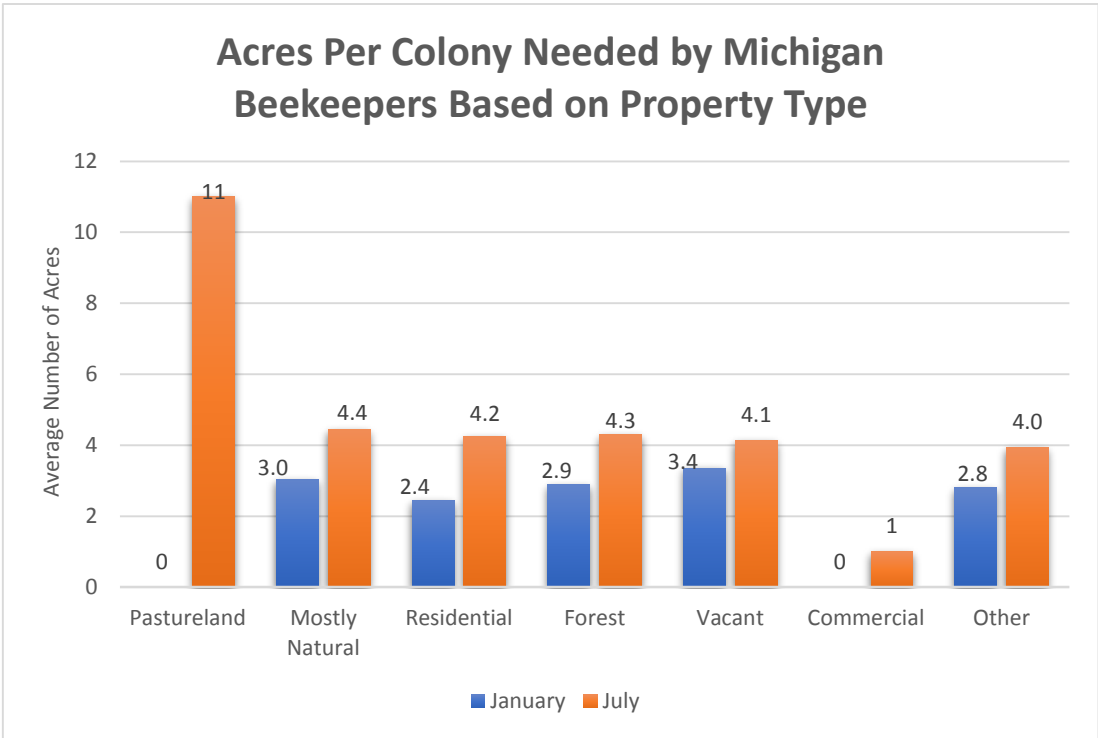
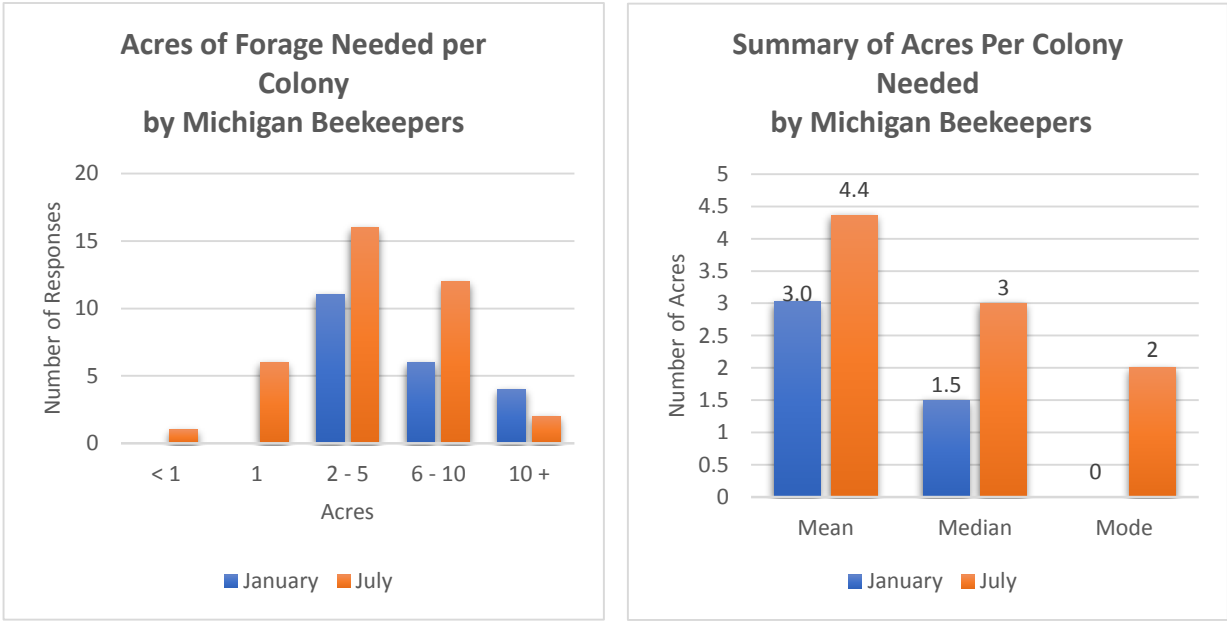
## Massachusetts (continued)



# NAPPC National Beekeeper Forage Survey

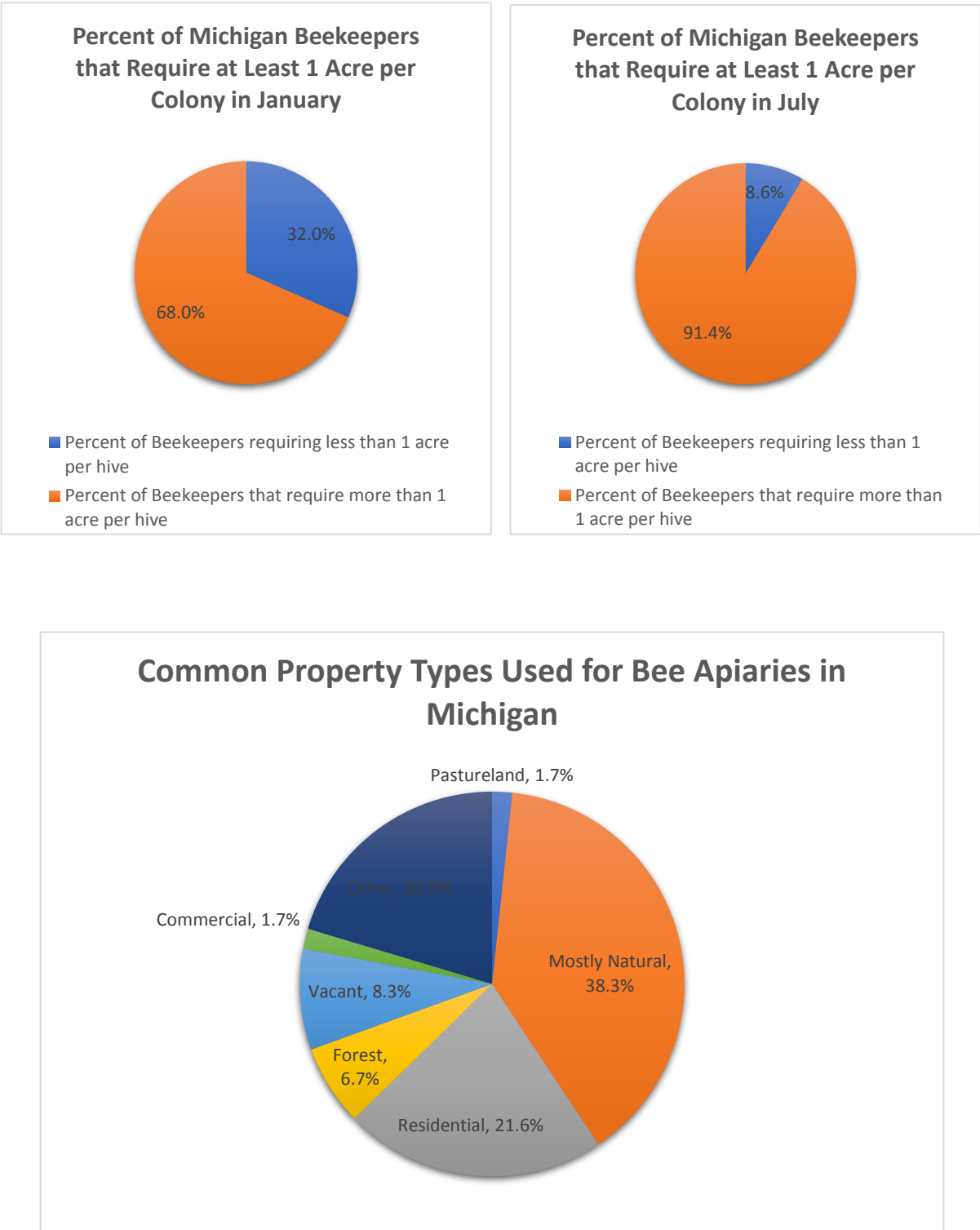
## Michigan

In Michigan, a total of 60 beekeepers responded to the survey.



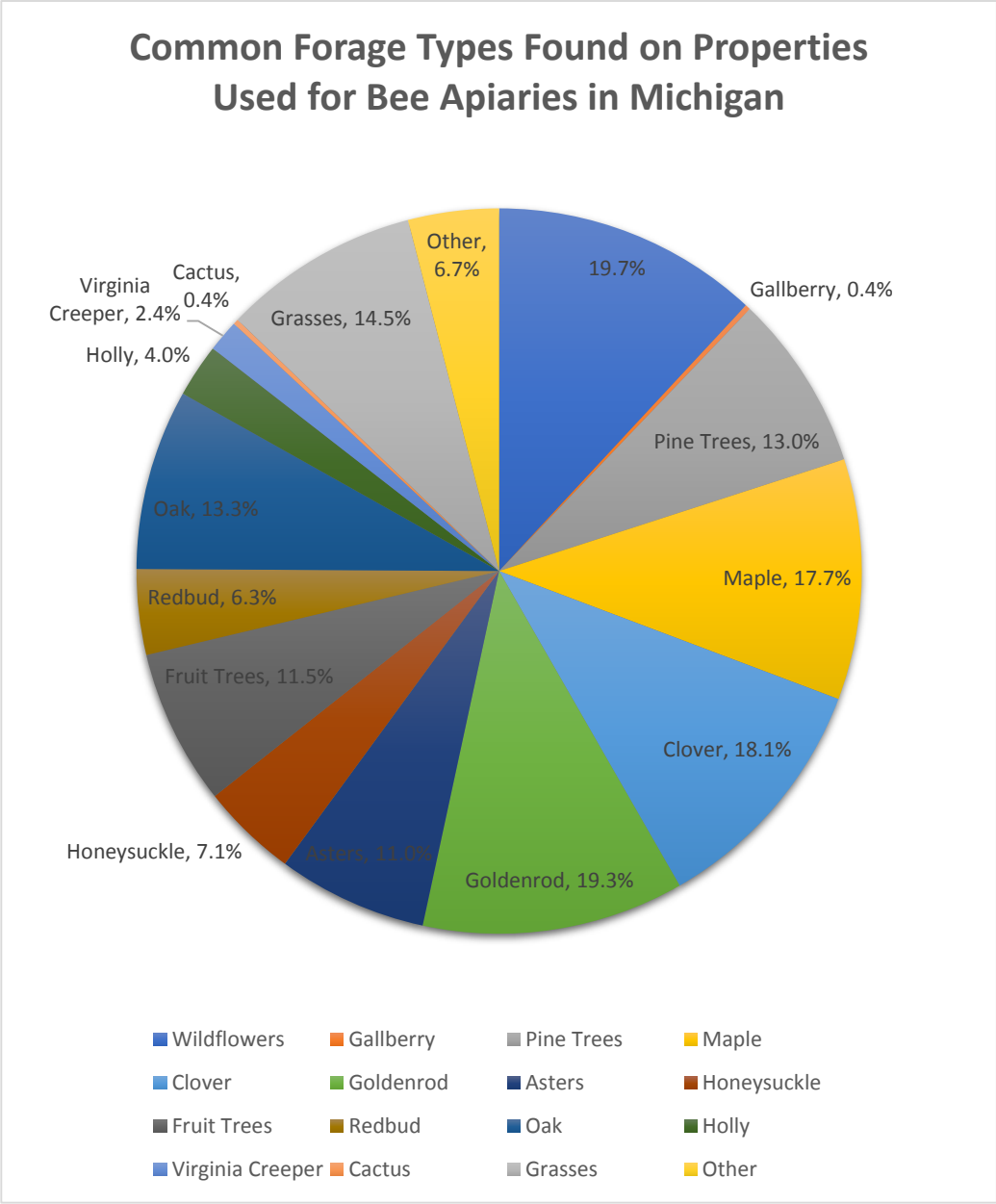
# NAPPC National Beekeeper Forage Survey

## Michigan (continued)



# NAPPC National Beekeeper Forage Survey

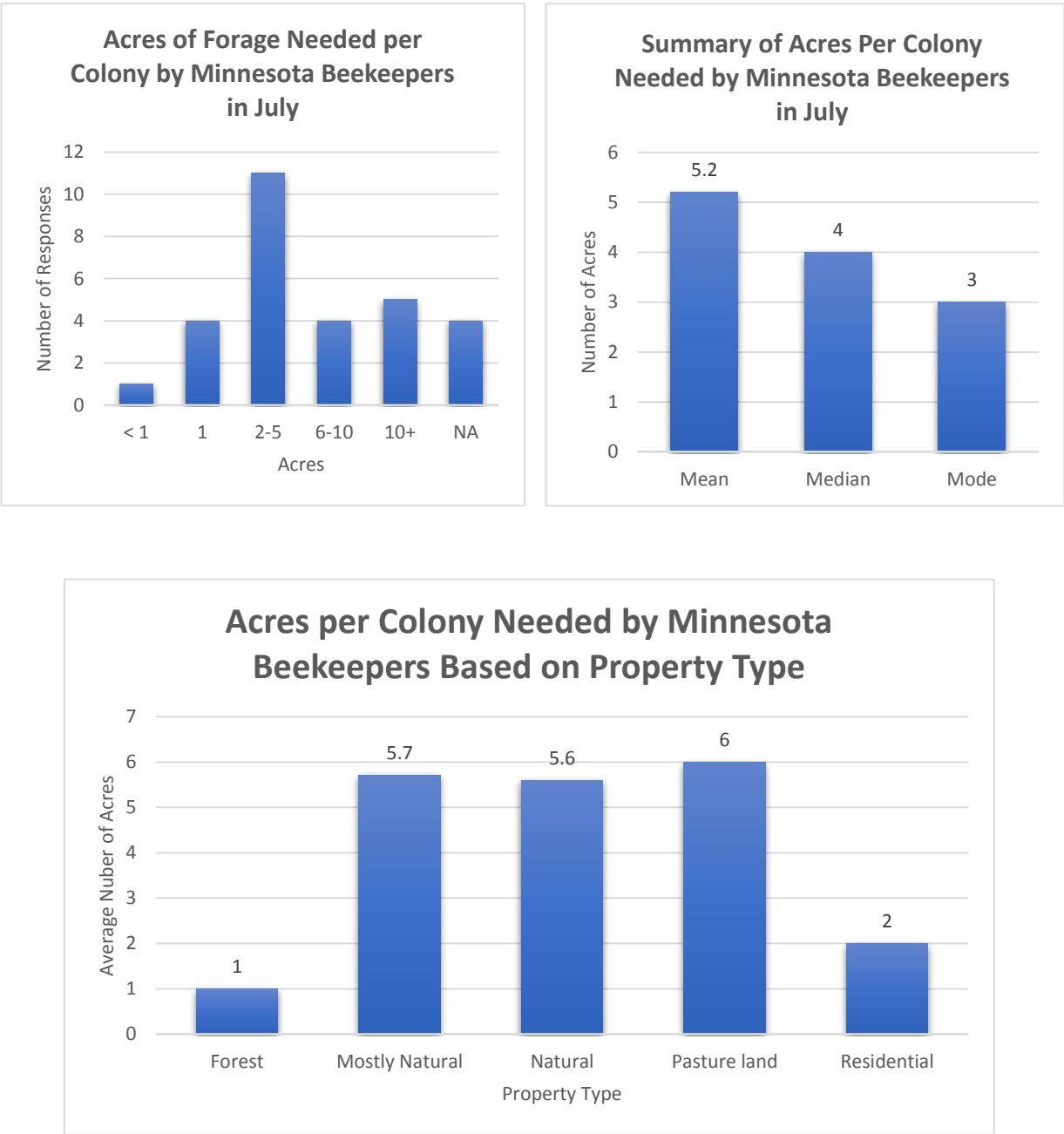
Michigan (continued)



# NAPPC National Beekeeper Forage Survey

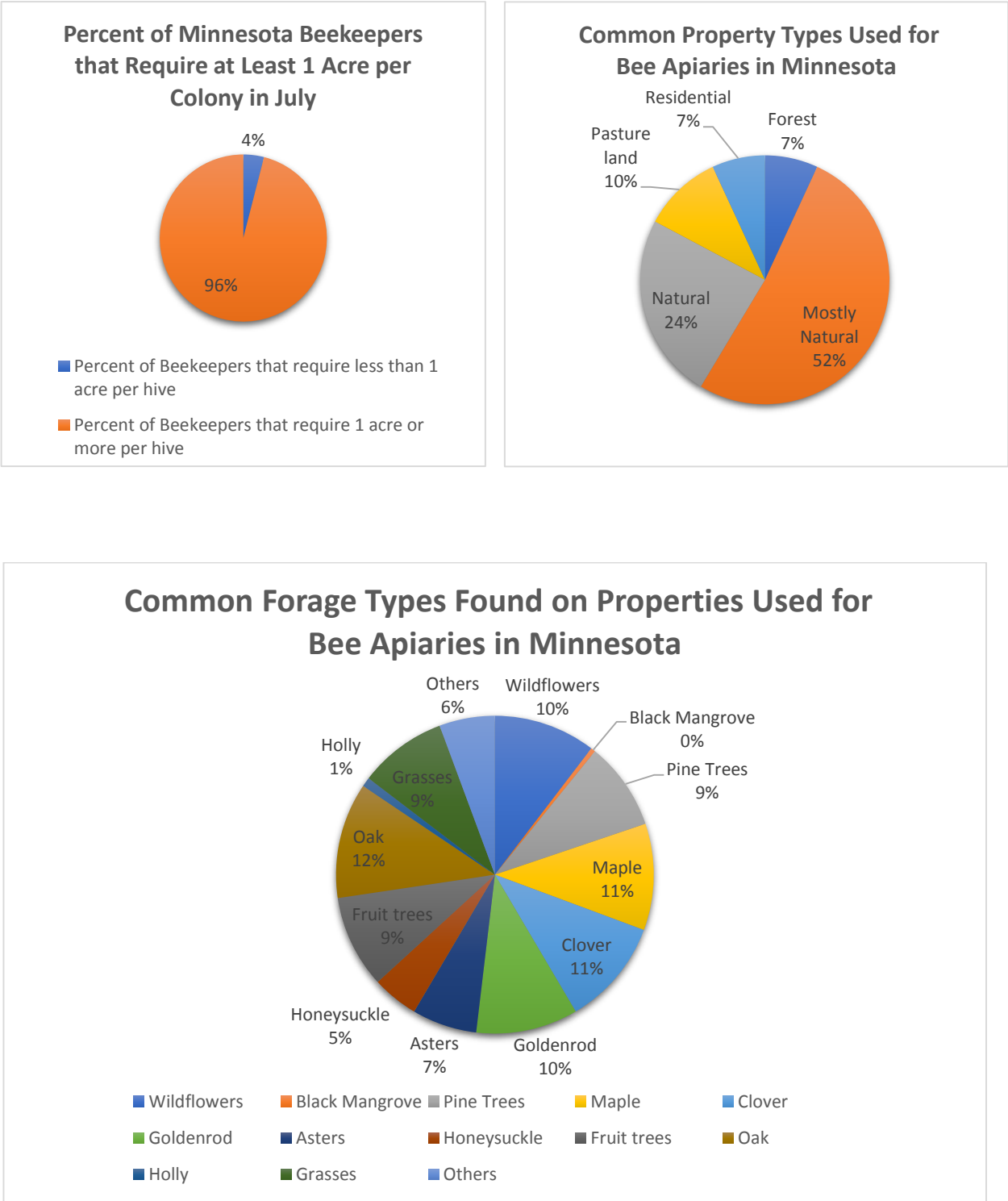
## Minnesota

In Minnesota, a total of 29 beekeepers responded to the survey. No data was available for January because bees are typically not active in cold weather.



# NAPPC National Beekeeper Forage Survey

## Minnesota (continued)



# NAPPC National Beekeeper Forage Survey

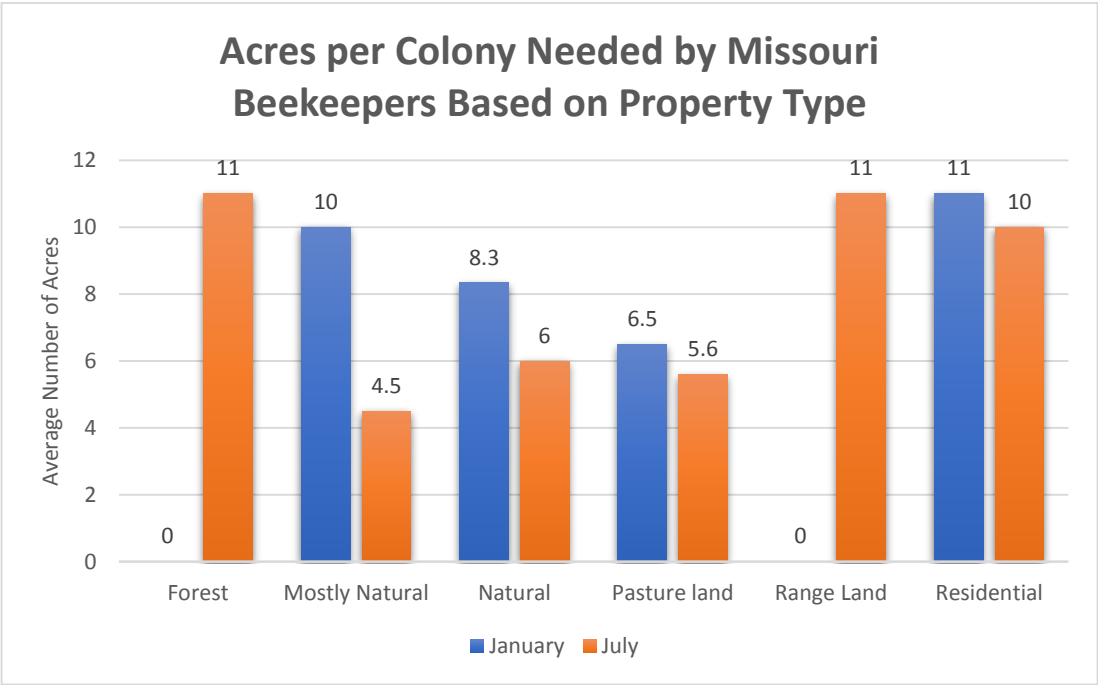
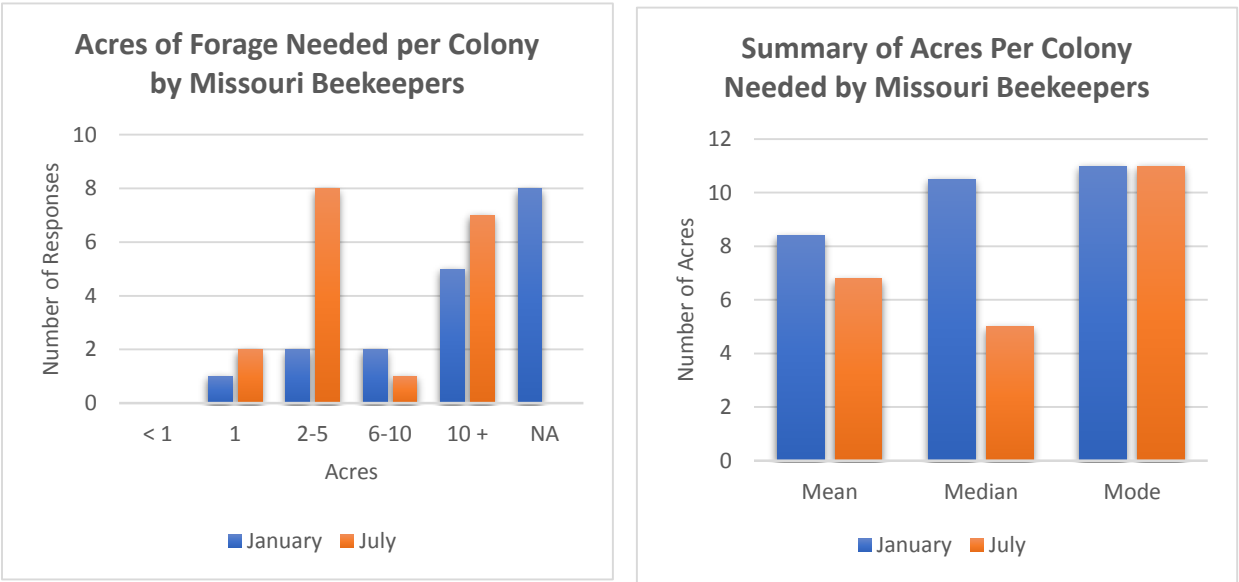
## Mississippi

No Data was available for Mississippi.

# NAPPC National Beekeeper Forage Survey

## Missouri

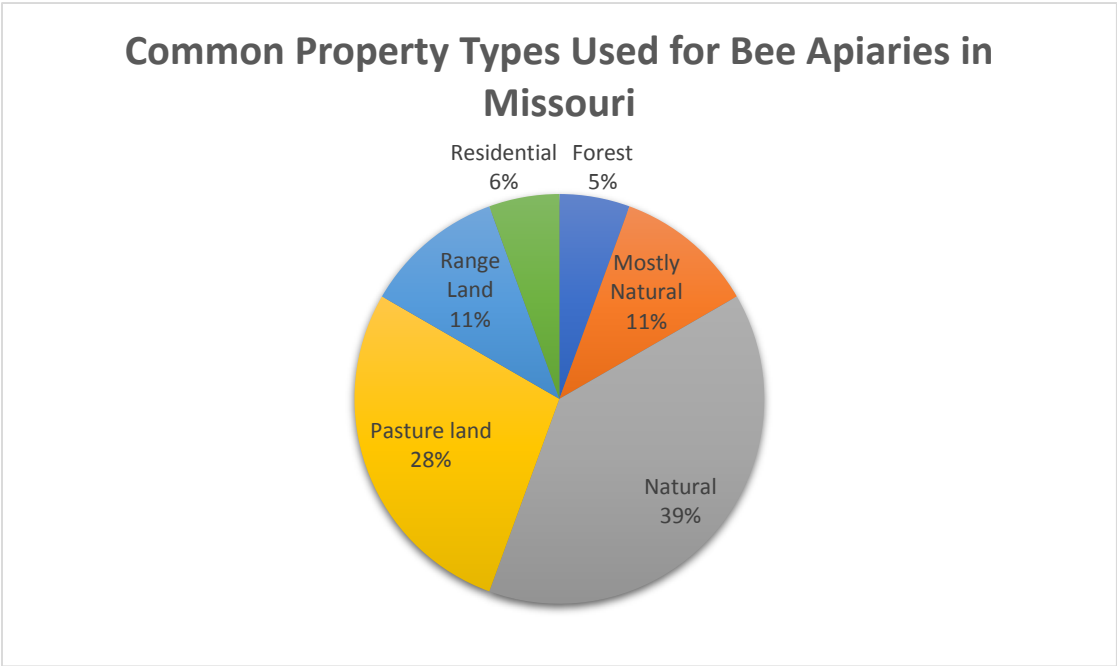
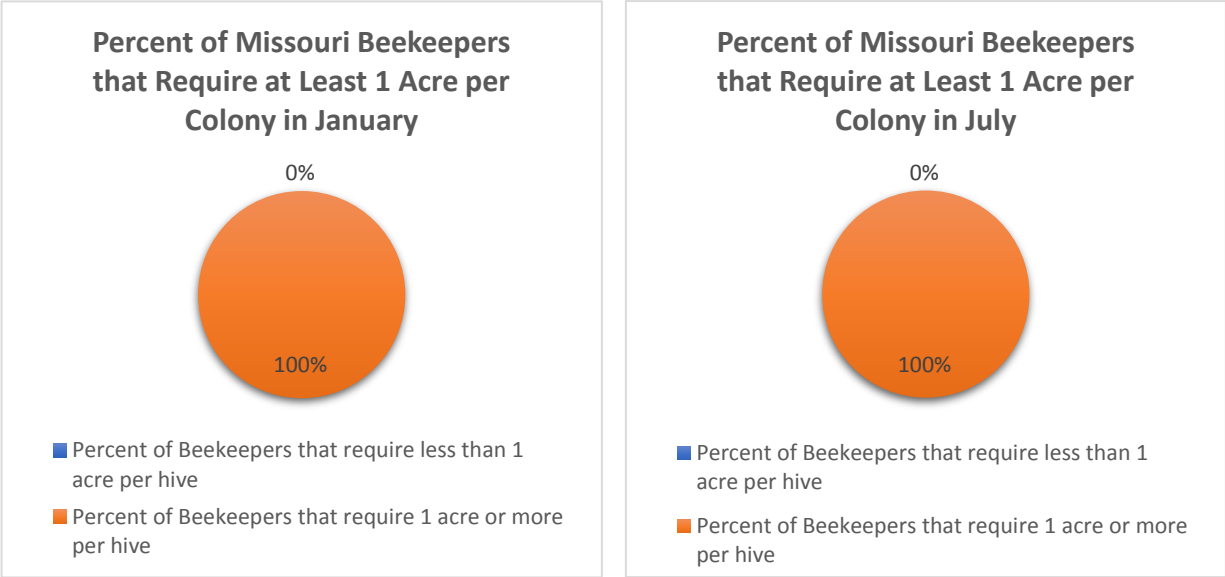
In Montana, a total of 18 beekeepers responded to the survey.





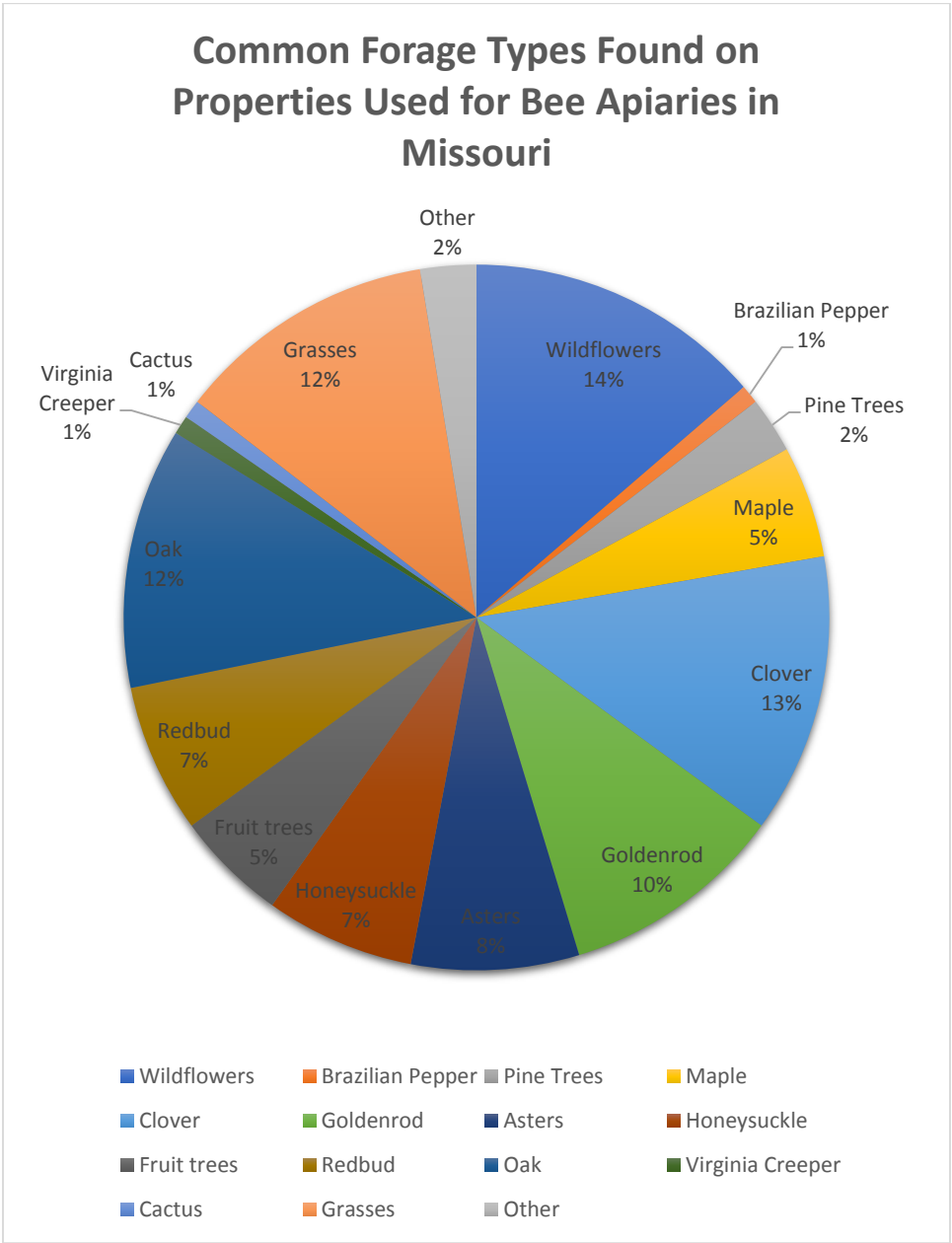
# NAPPC National Beekeeper Forage Survey

## Missouri (continued)



# NAPPC National Beekeeper Forage Survey

Missouri (continued)



# NAPPC National Beekeeper Forage Survey

## Montana

No Data was available for Montana.

# NAPPC National Beekeeper Forage Survey

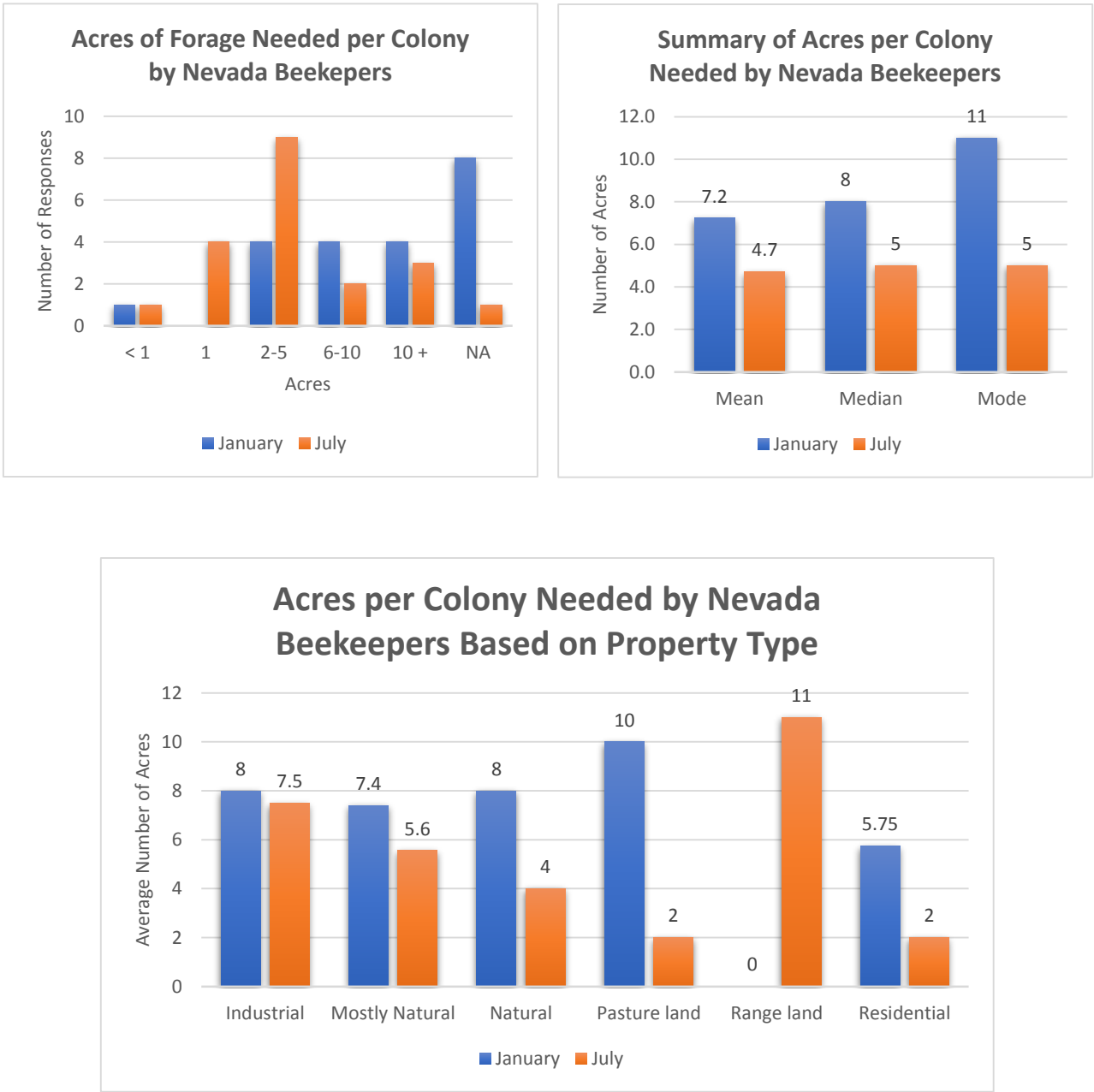
## Nebraska

No Data was available for Nebraska

# NAPPC National Beekeeper Forage Survey

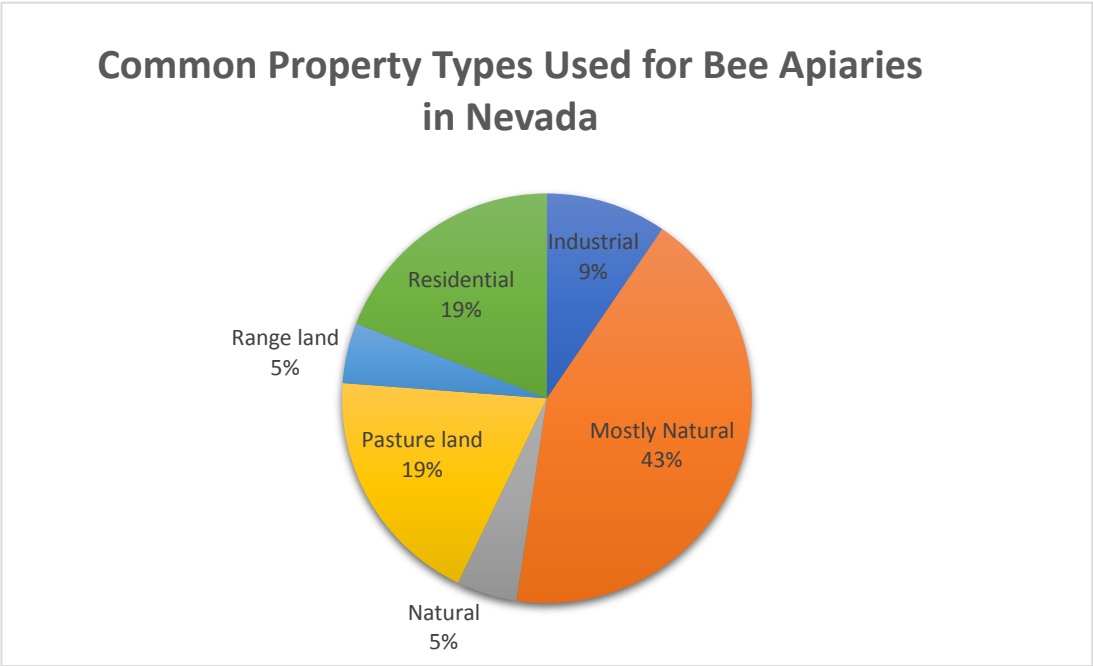
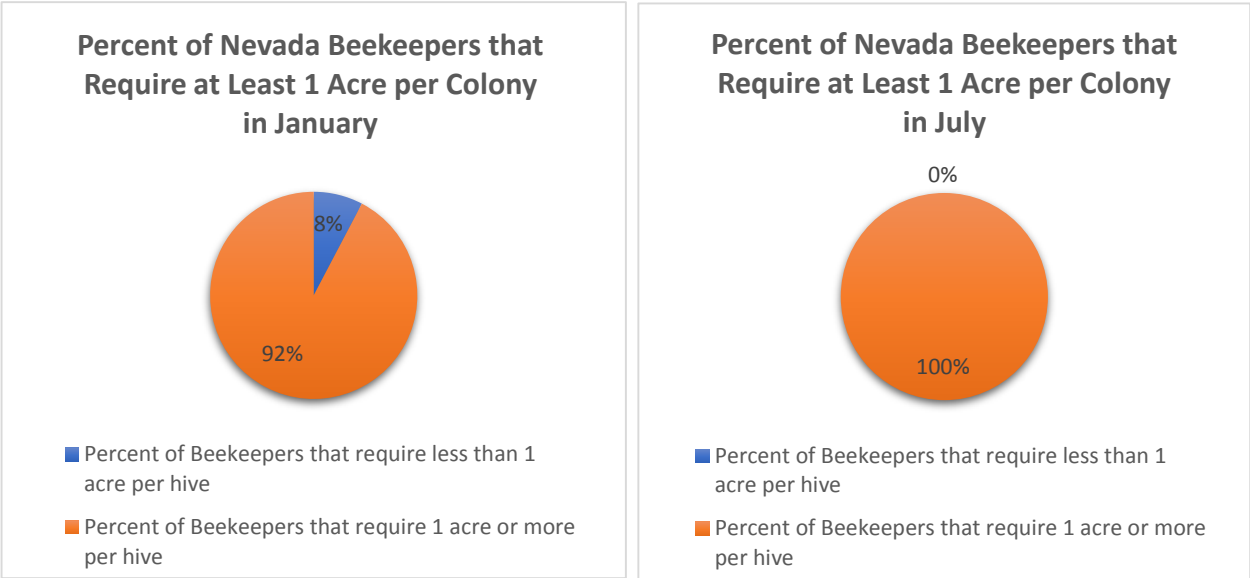
## Nevada

In Nevada, a total of 20 beekeepers responded to the survey.



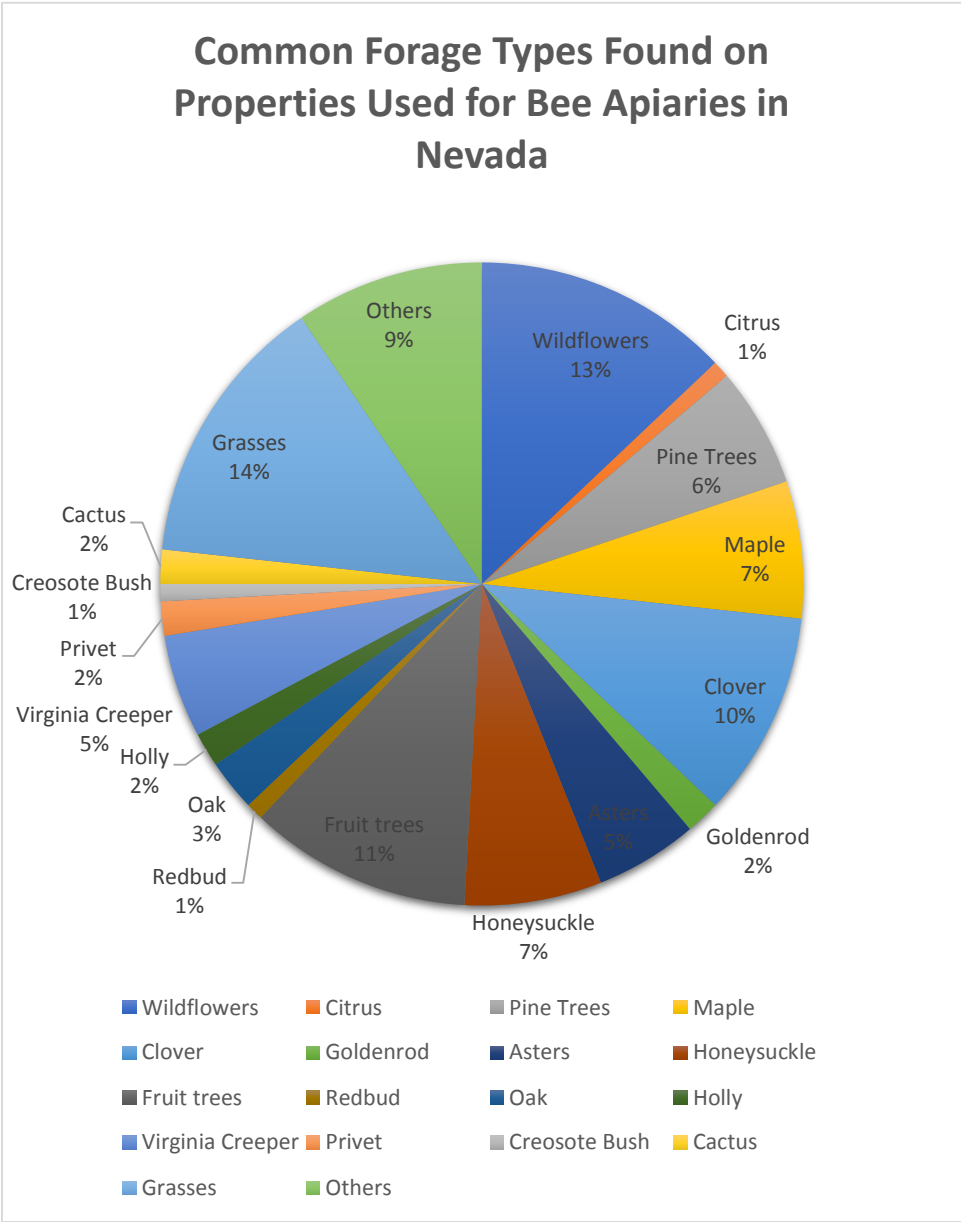
# NAPPC National Beekeeper Forage Survey

## Nevada (continued)



# NAPPC National Beekeeper Forage Survey

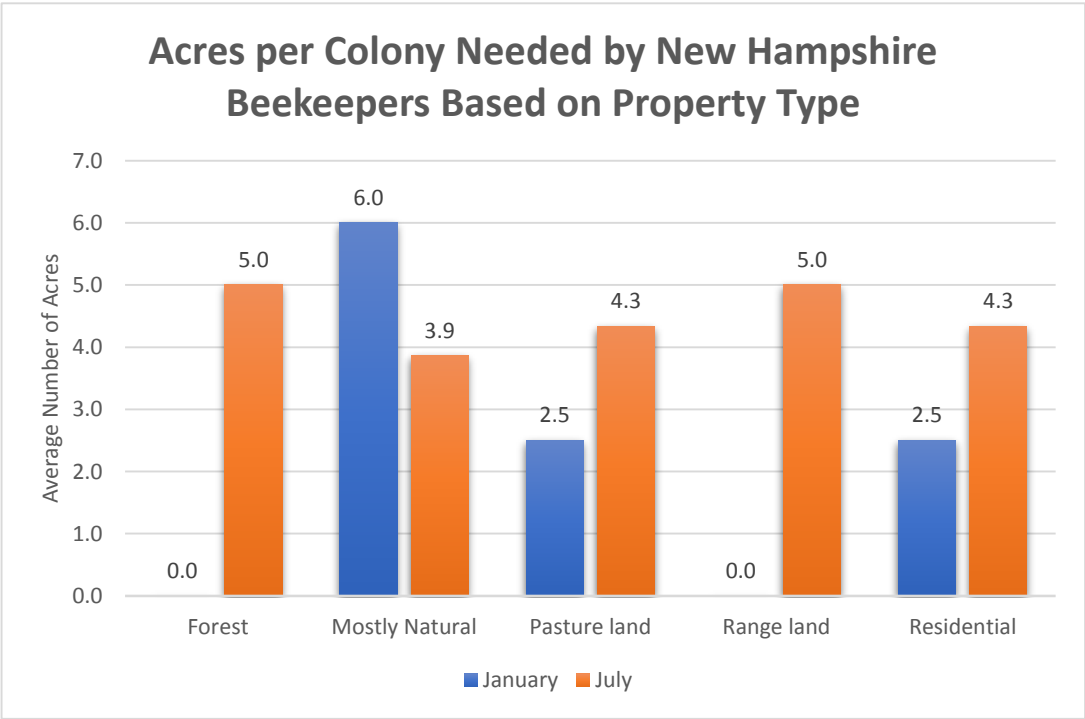
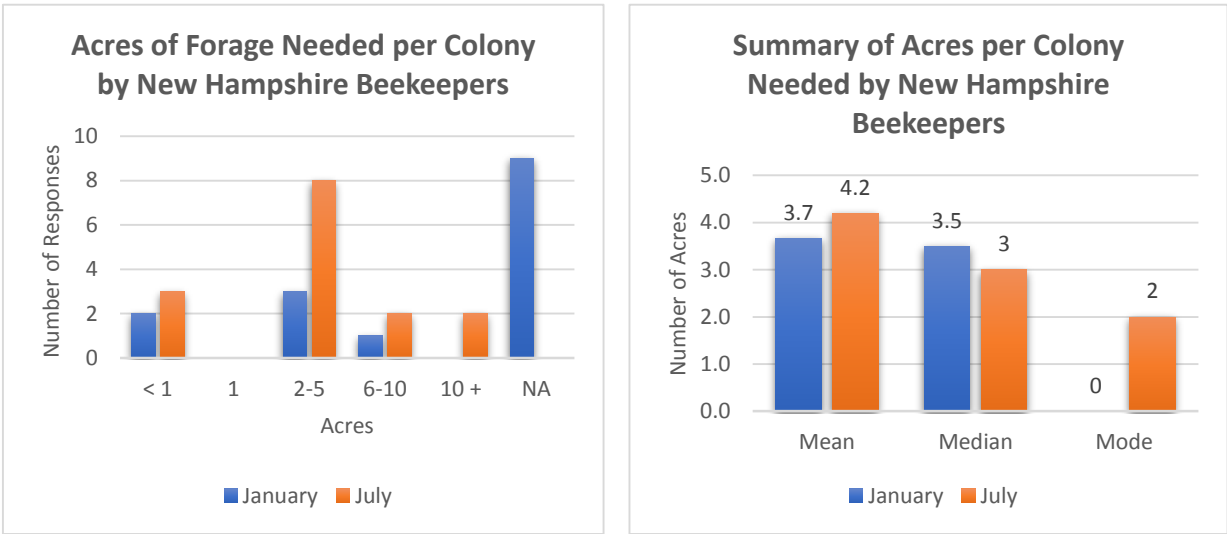
Nevada (continued)



# NAPPC National Beekeeper Forage Survey

## New Hampshire

In New Hampshire, a total of 15 beekeepers responded to the survey.

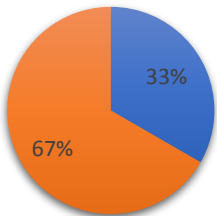




# NAPPC National Beekeeper Forage Survey

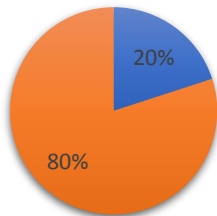
## New Hampshire (continued)

**Percent of New Hampshire Beekeepers that Require at Least 1 Acre per Colony in January**



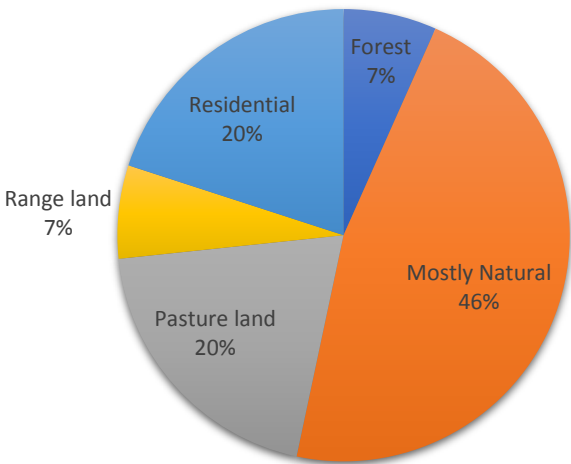
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

**Percent of New Hampshire Beekeepers that Require at Least 1 Acre per Colony in July**



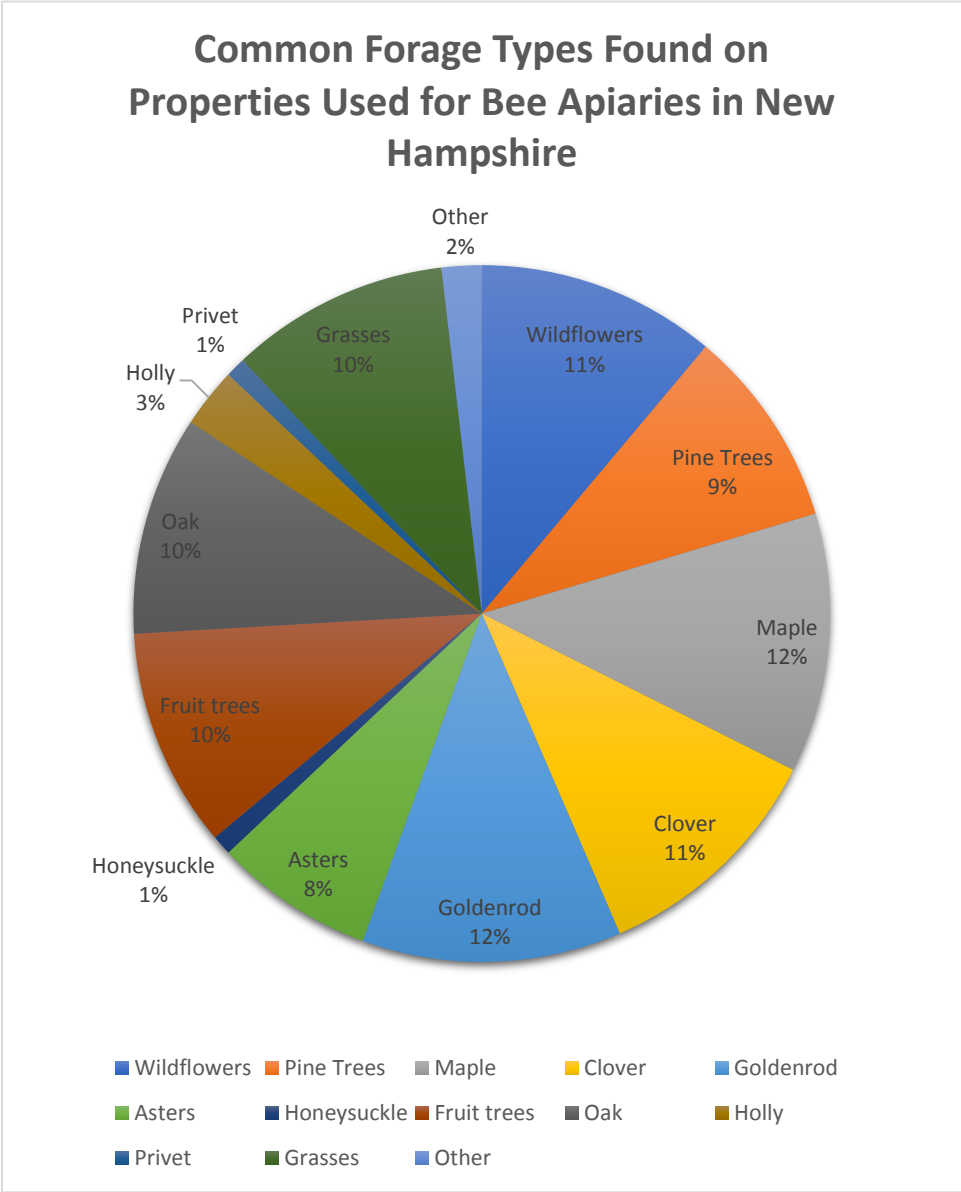
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers that require 1 acre or more per hive

**Common Property Types Used for Bee Apiaries in New Hampshire**



# NAPPC National Beekeeper Forage Survey

New Hampshire (continued)



# NAPPC National Beekeeper Forage Survey

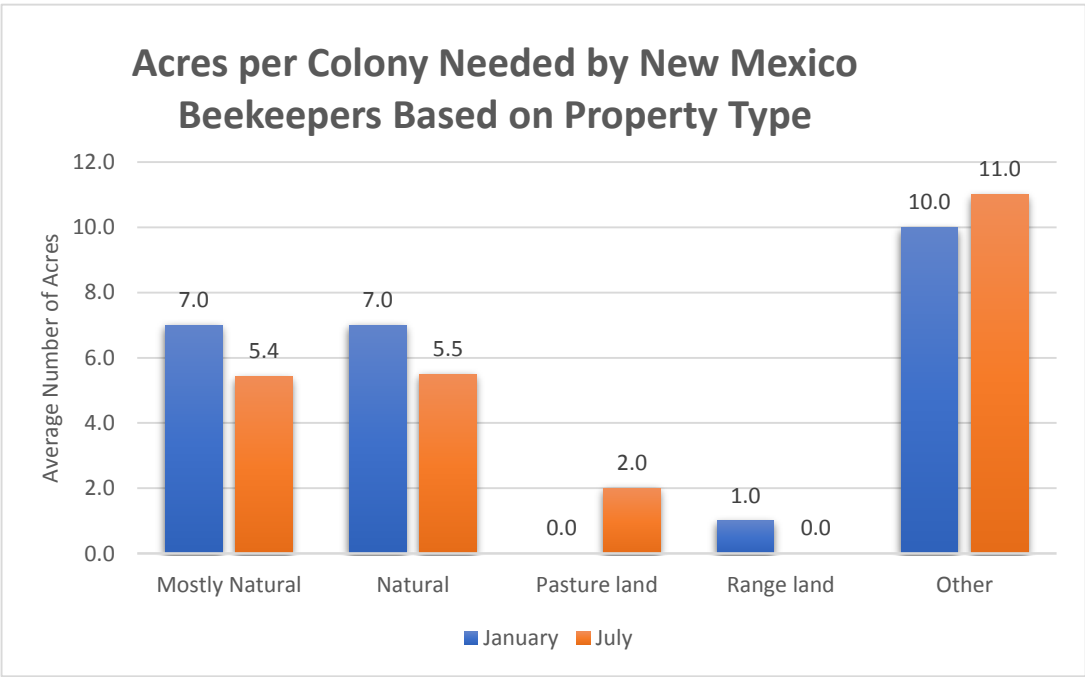
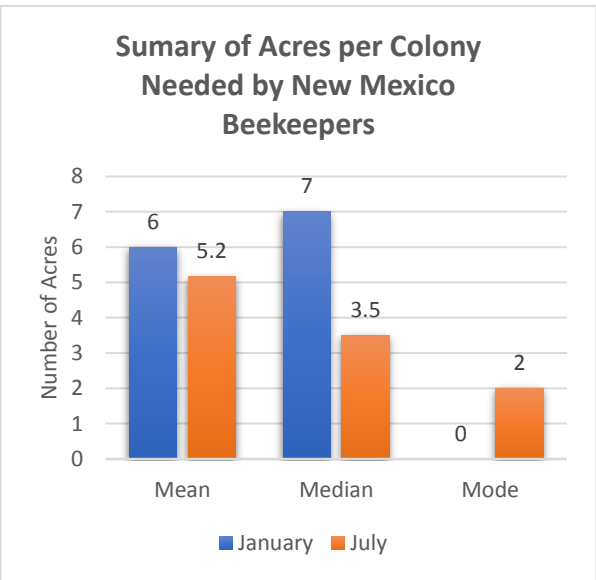
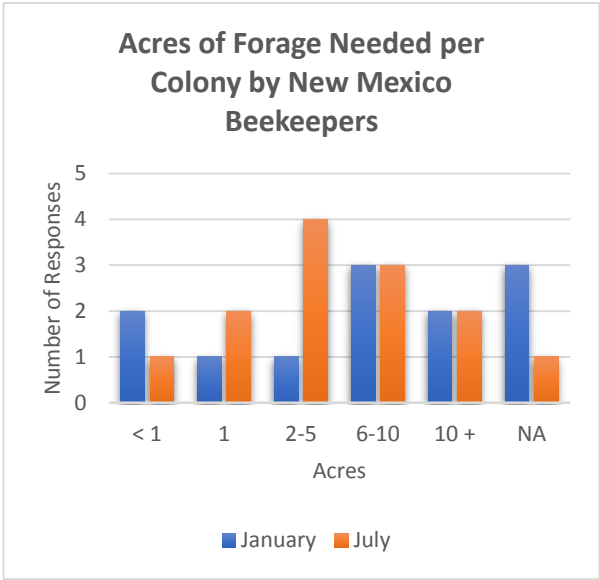
## New Jersey

Not enough data was available for New Jersey.

# NAPPC National Beekeeper Forage Survey

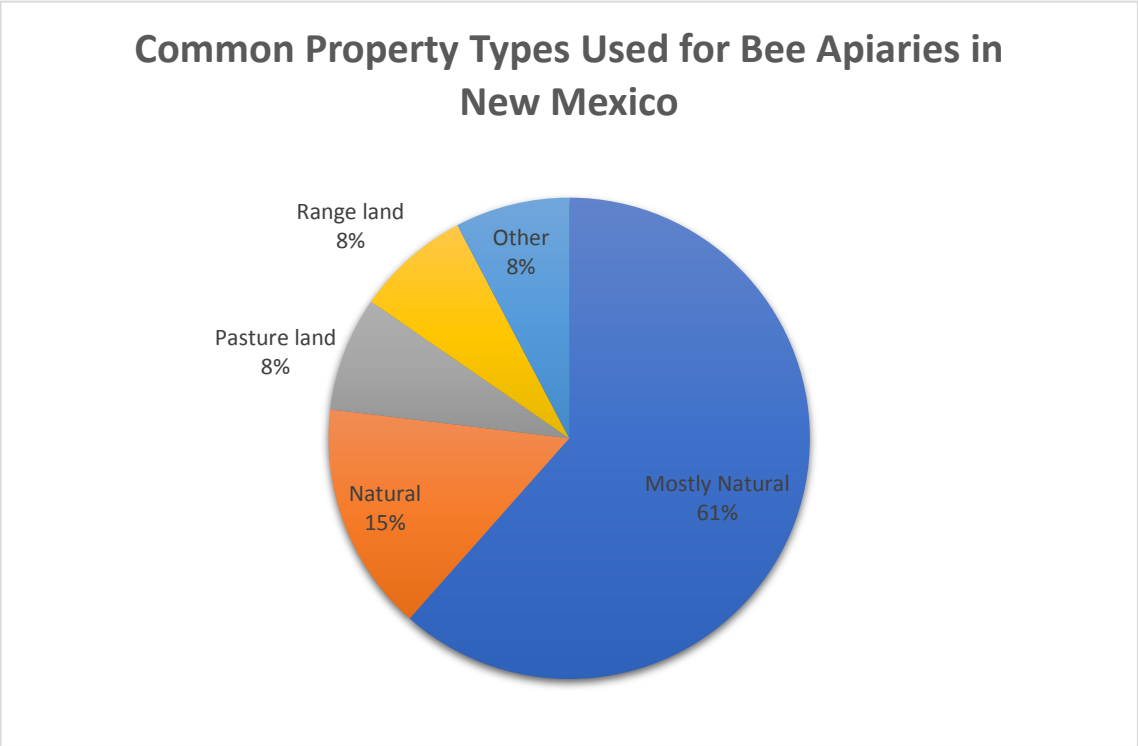
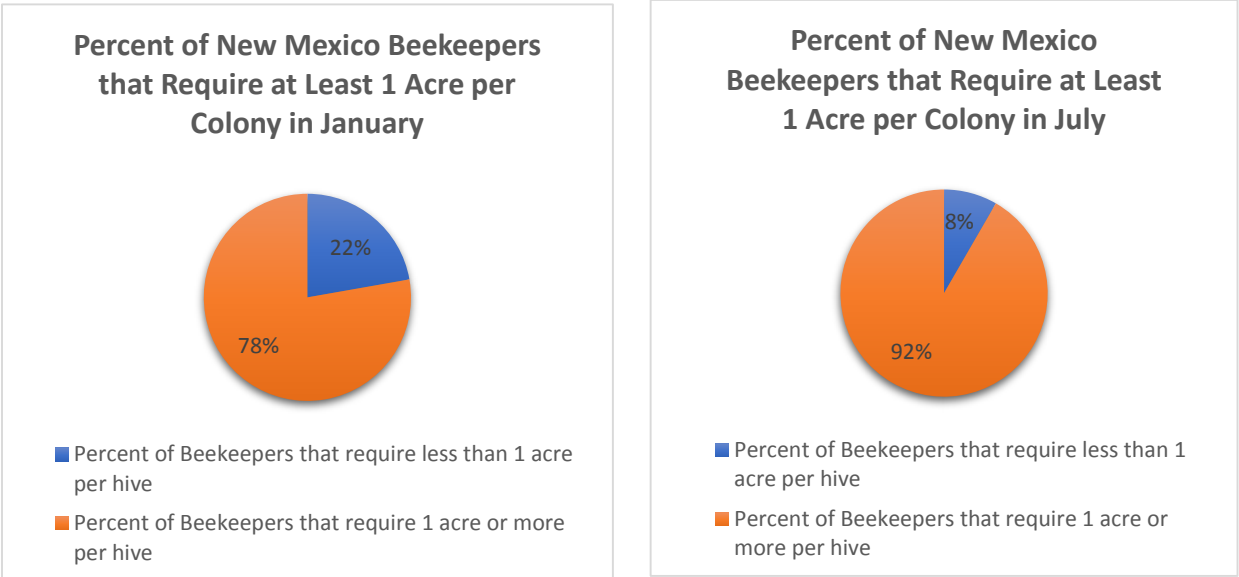
## New Mexico

In New Mexico, a total of 13 beekeepers responded to the survey.



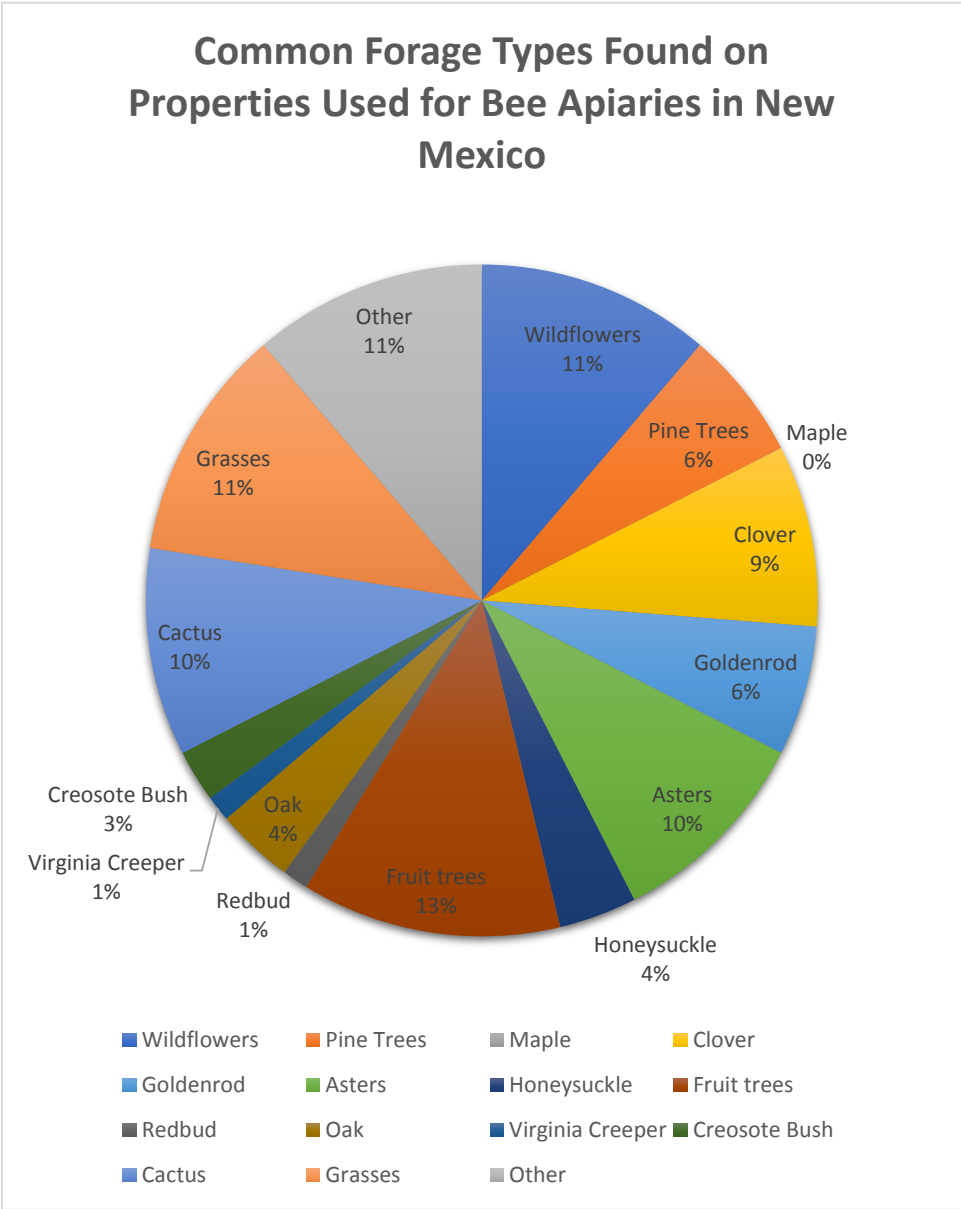
# NAPPC National Beekeeper Forage Survey

## New Mexico (continued)



# NAPPC National Beekeeper Forage Survey

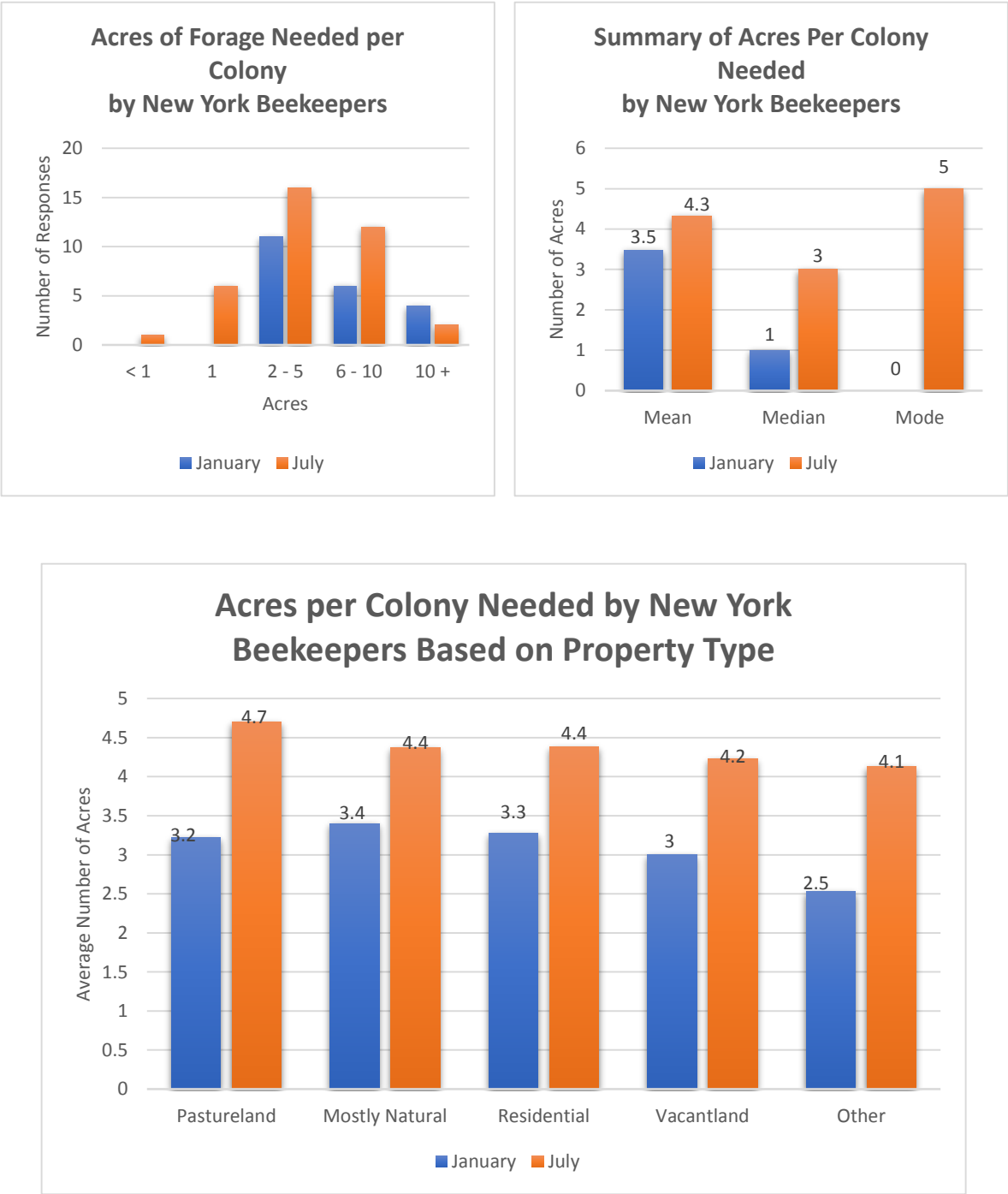
New Mexico (continued)



# NAPPC National Beekeeper Forage Survey

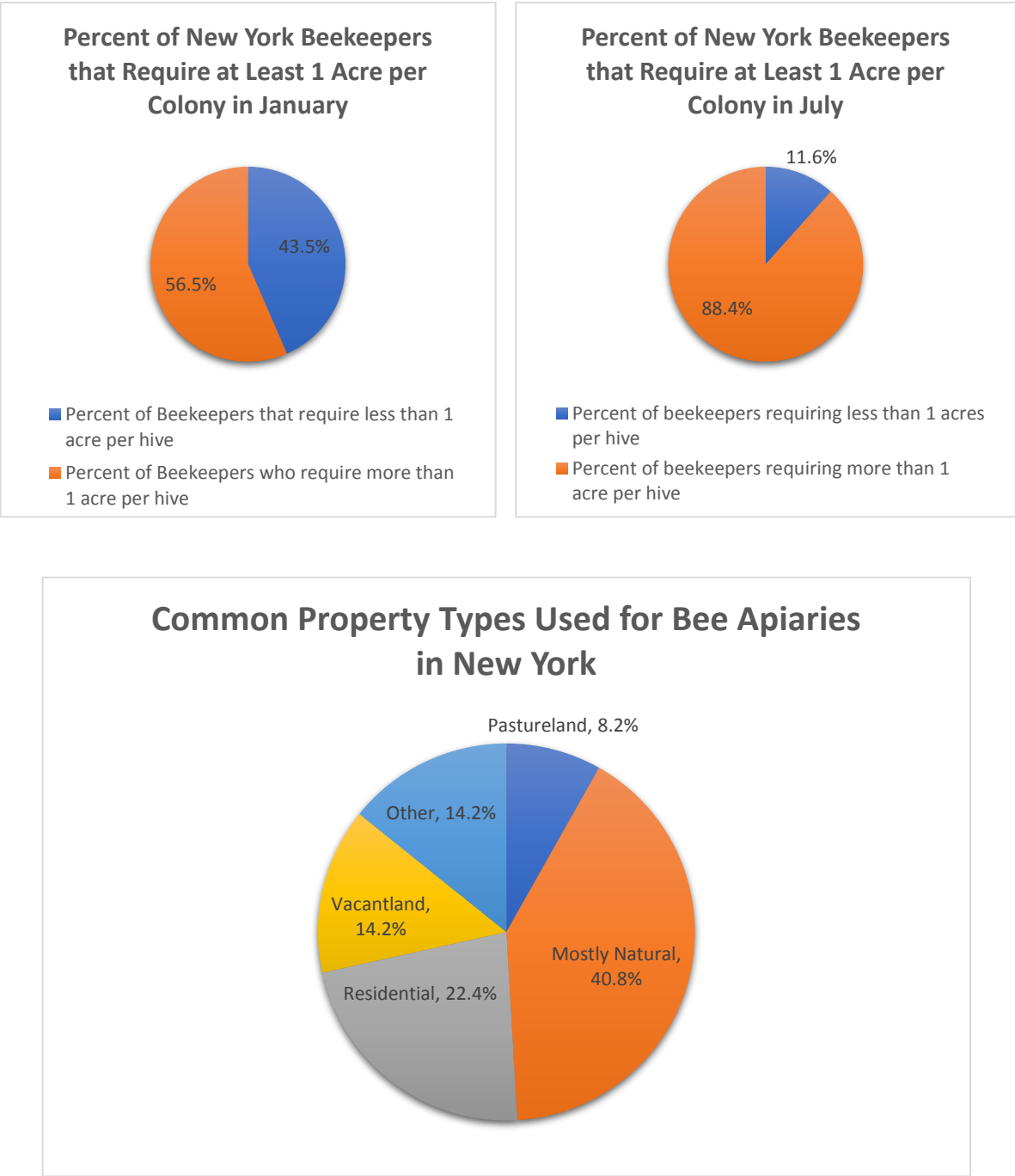
## New York

In New York, a total of 49 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

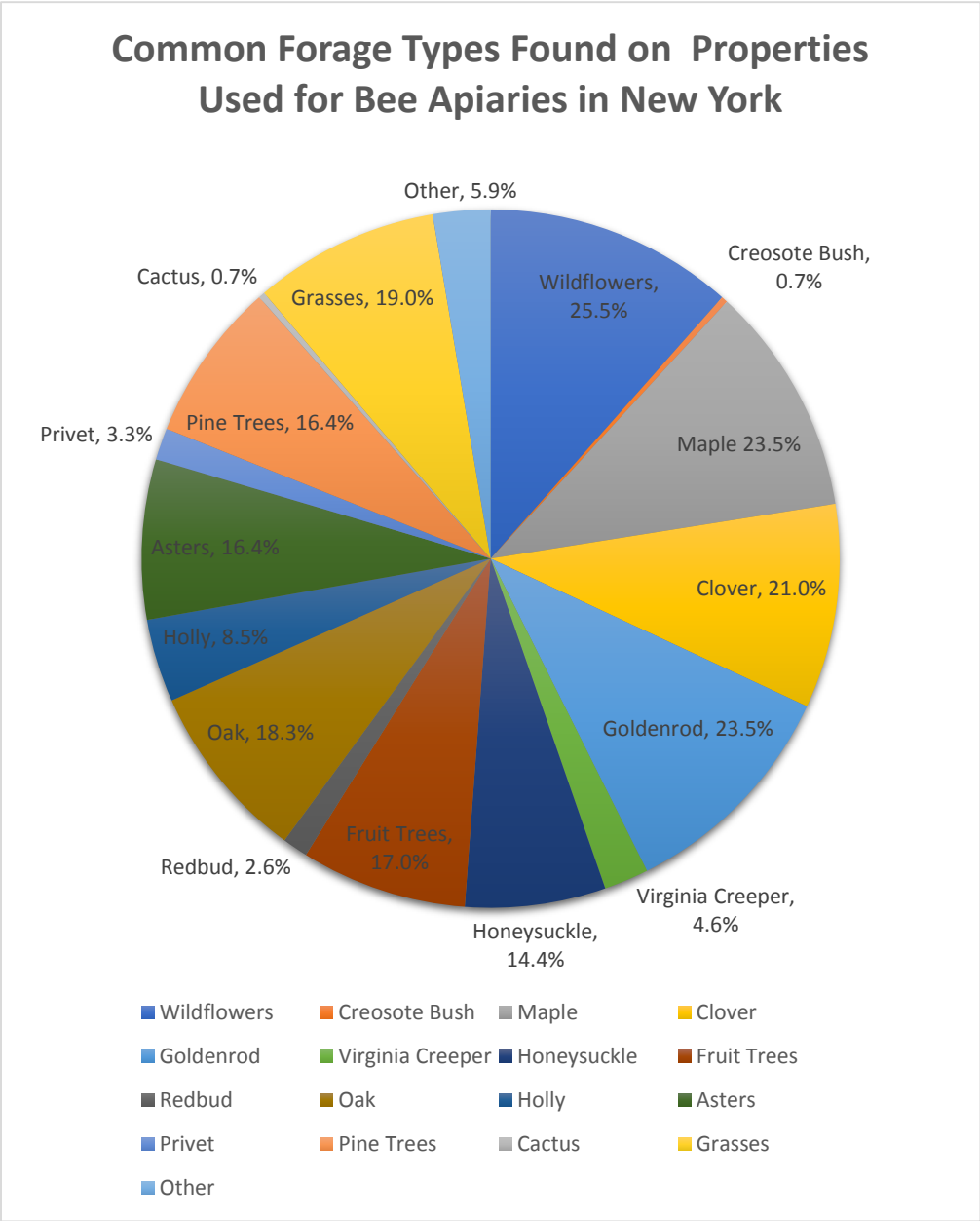
## New York (continued)





# NAPPC National Beekeeper Forage Survey

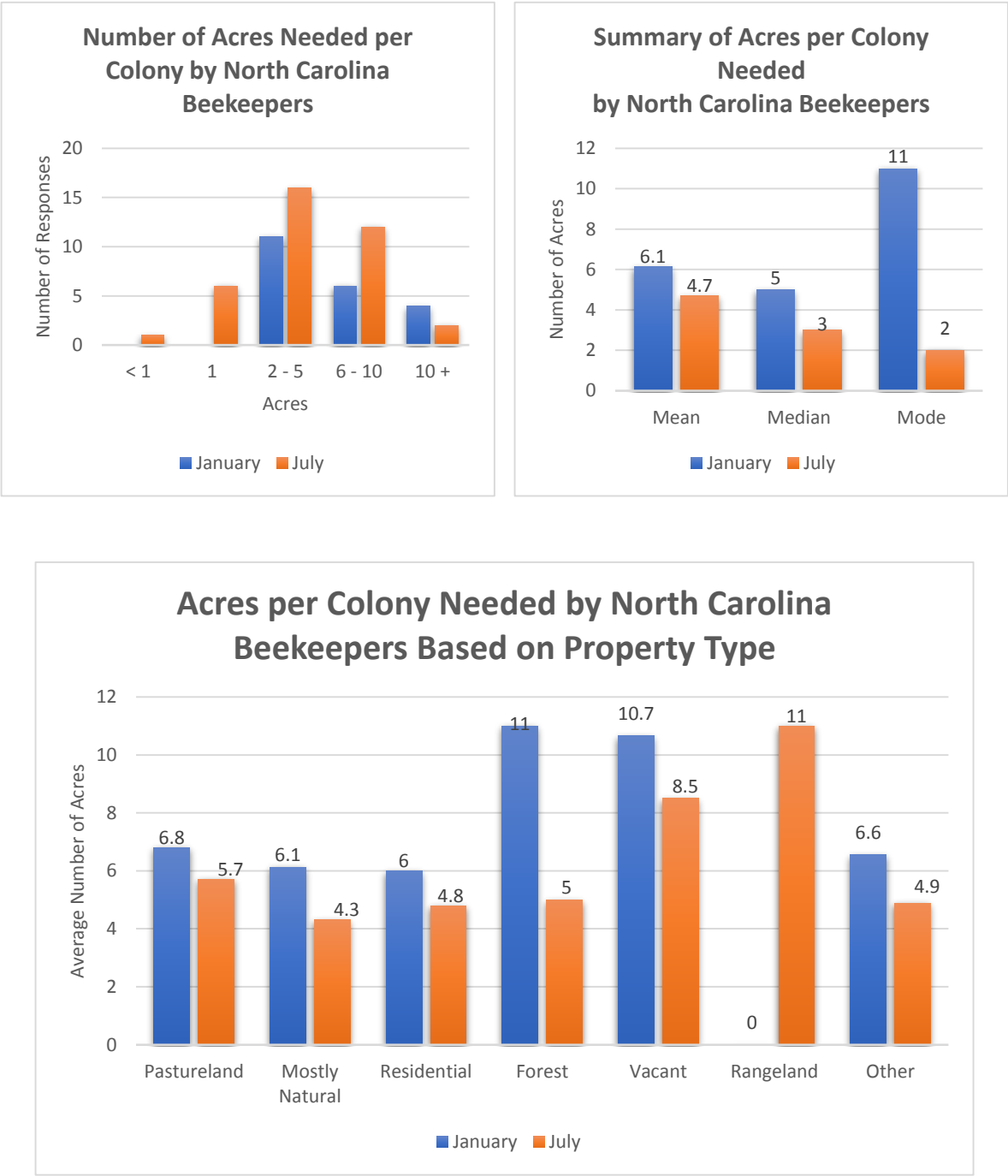
New York (continued)



# NAPPC National Beekeeper Forage Survey

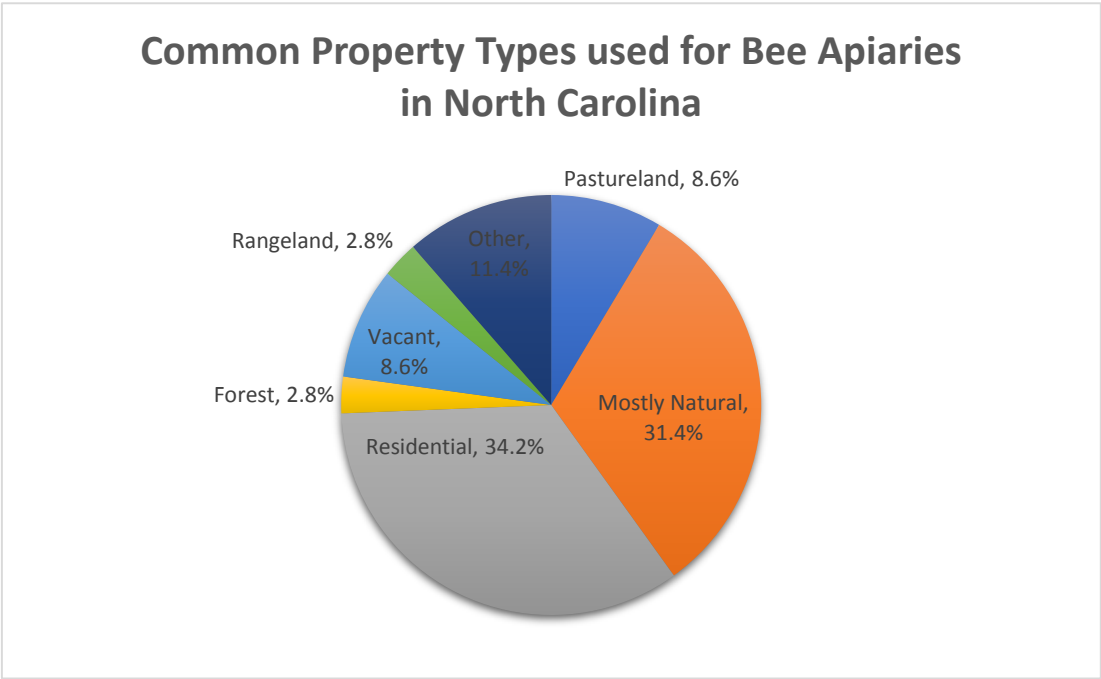
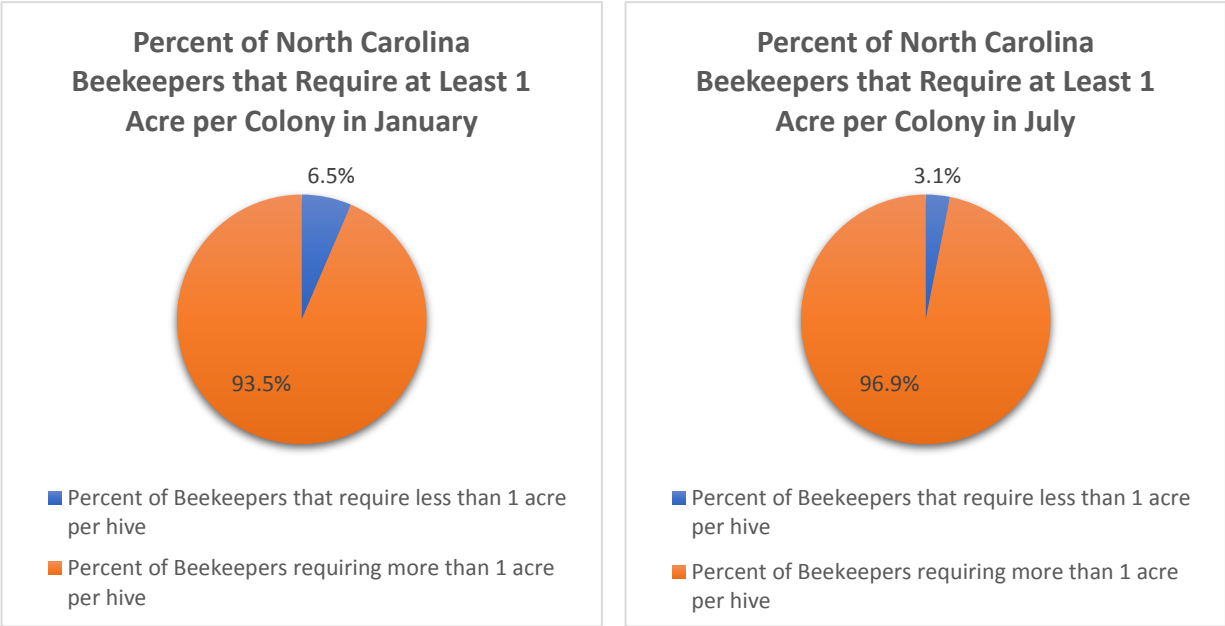
## North Carolina

In North Carolina, a total of 35 beekeepers responded to the survey.



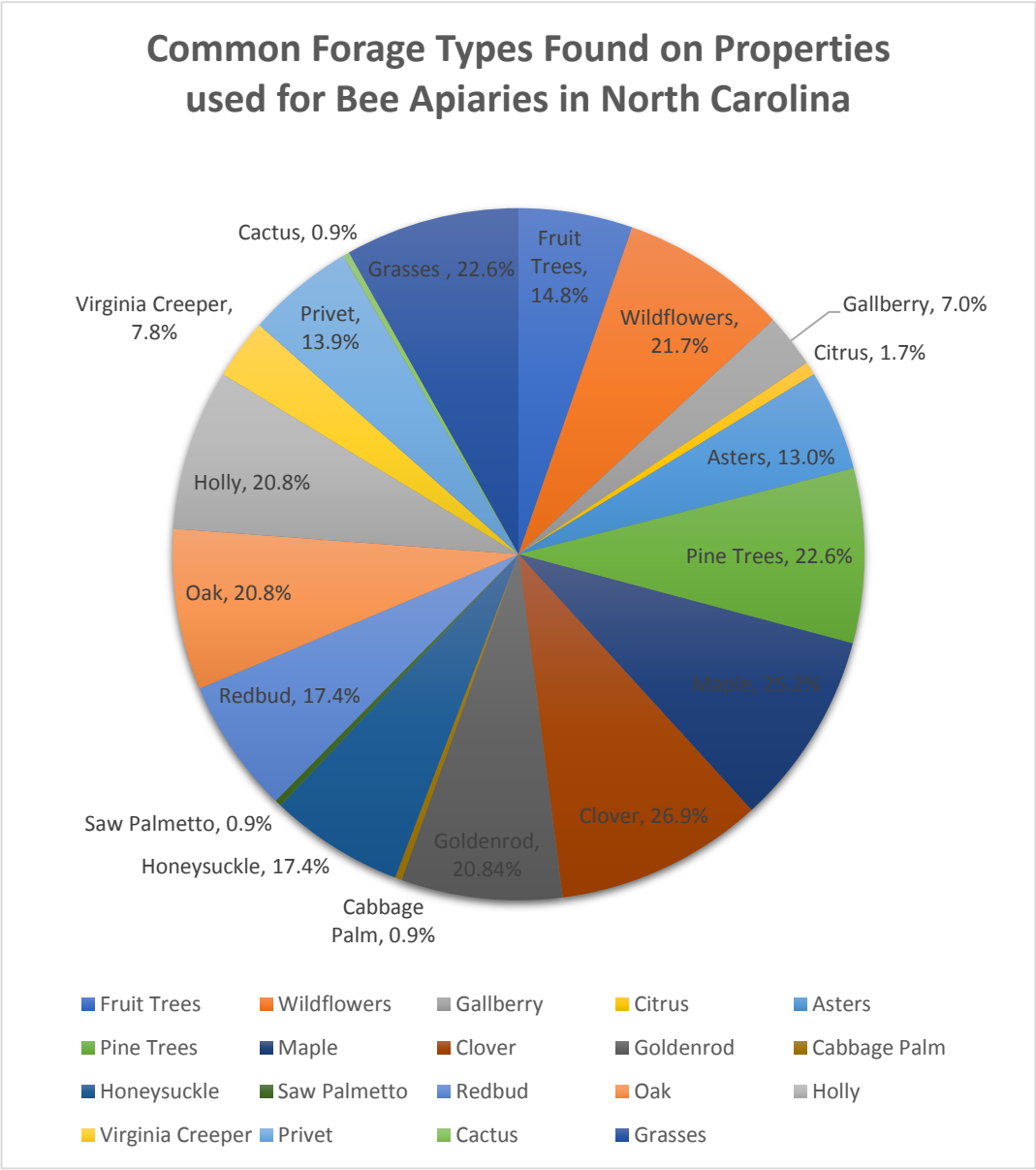
# NAPPC National Beekeeper Forage Survey

## North Carolina (continued)



# NAPPC National Beekeeper Forage Survey

## North Carolina (continued)



# NAPPC National Beekeeper Forage Survey

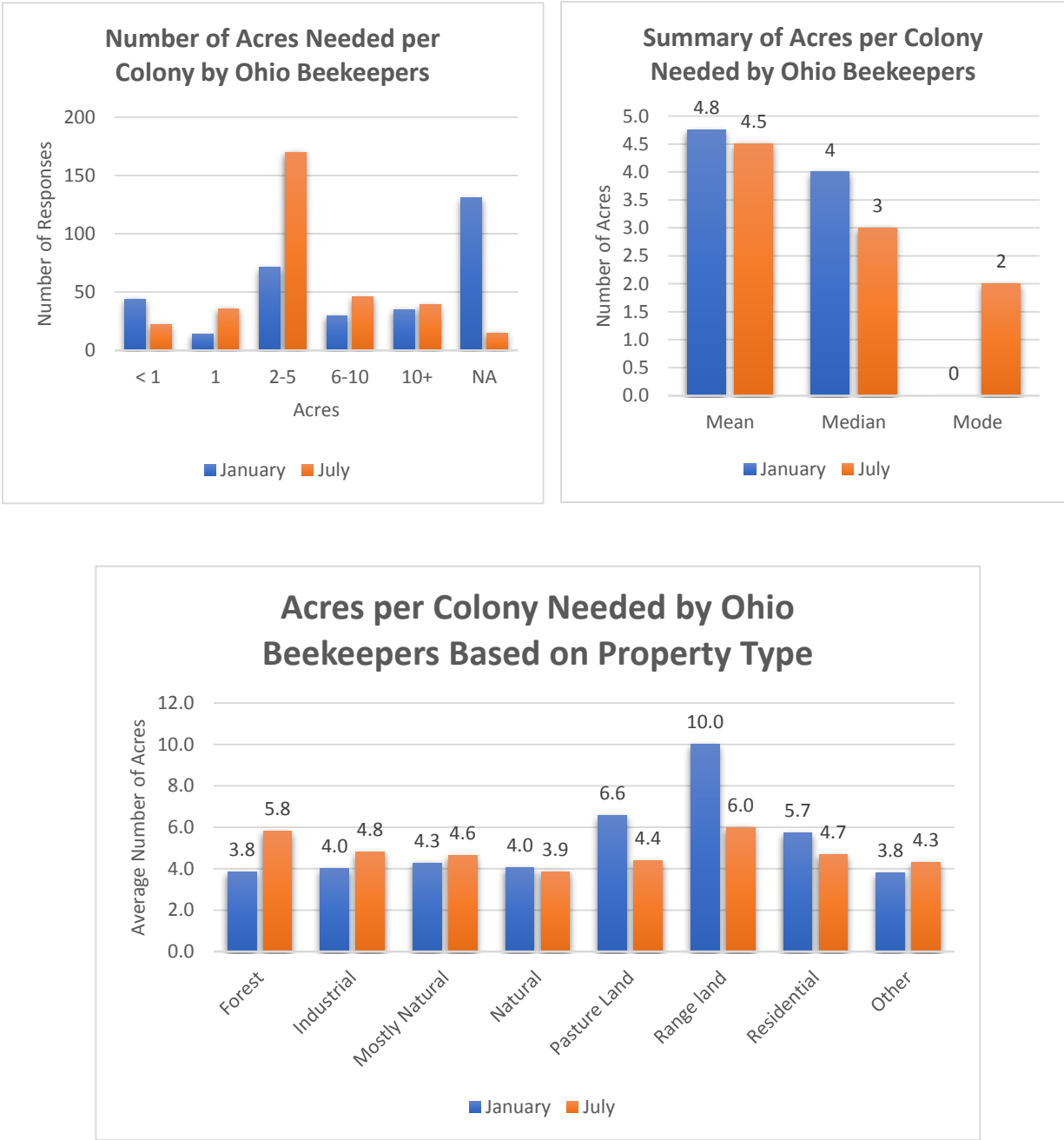
## North Dakota

No Data

# NAPPC National Beekeeper Forage Survey

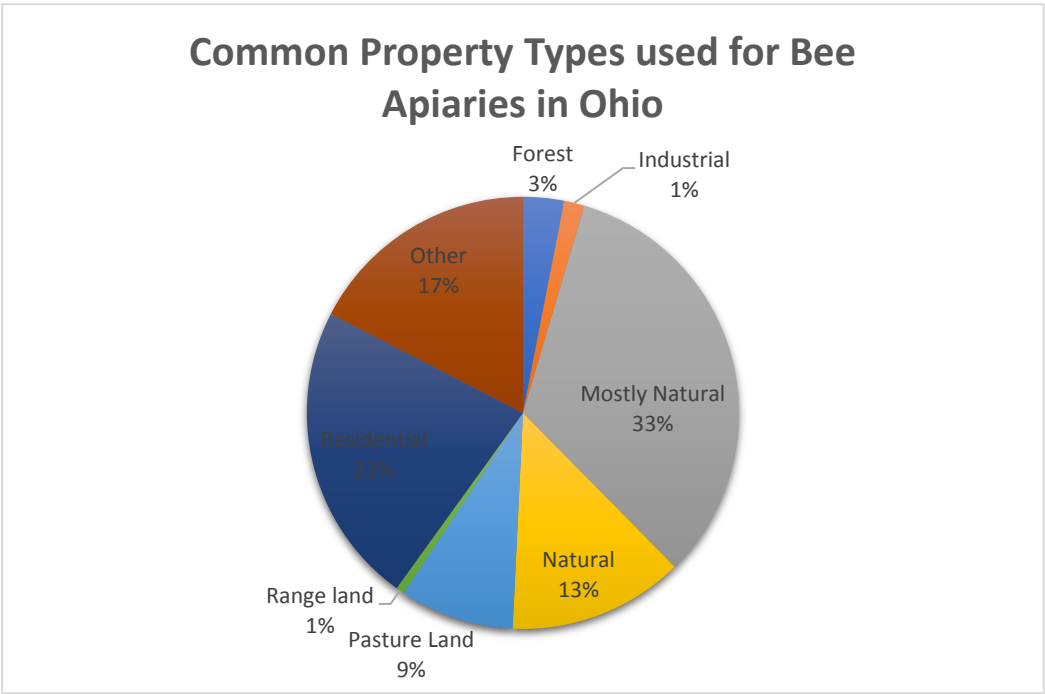
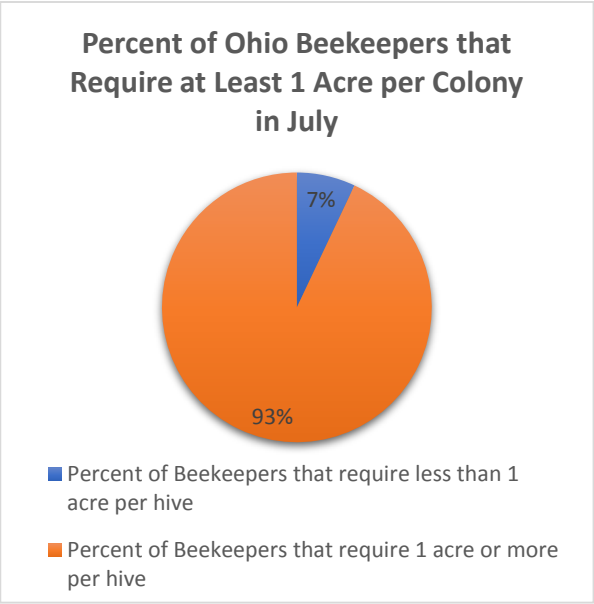
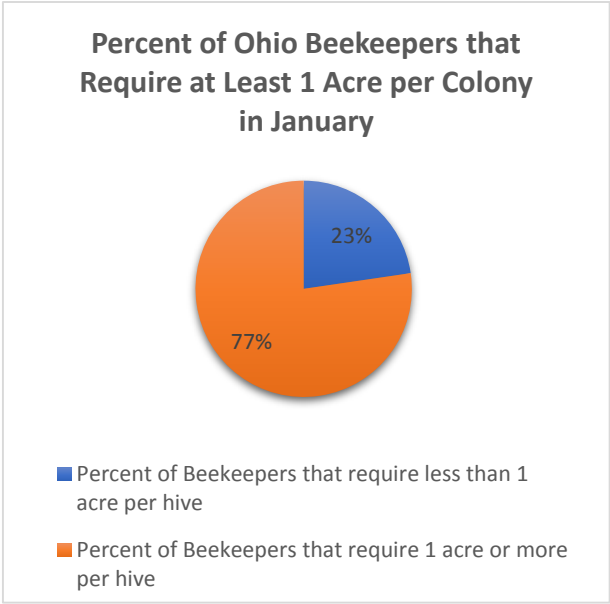
## Ohio

In Ohio, a total of 328 beekeepers responded to the survey.



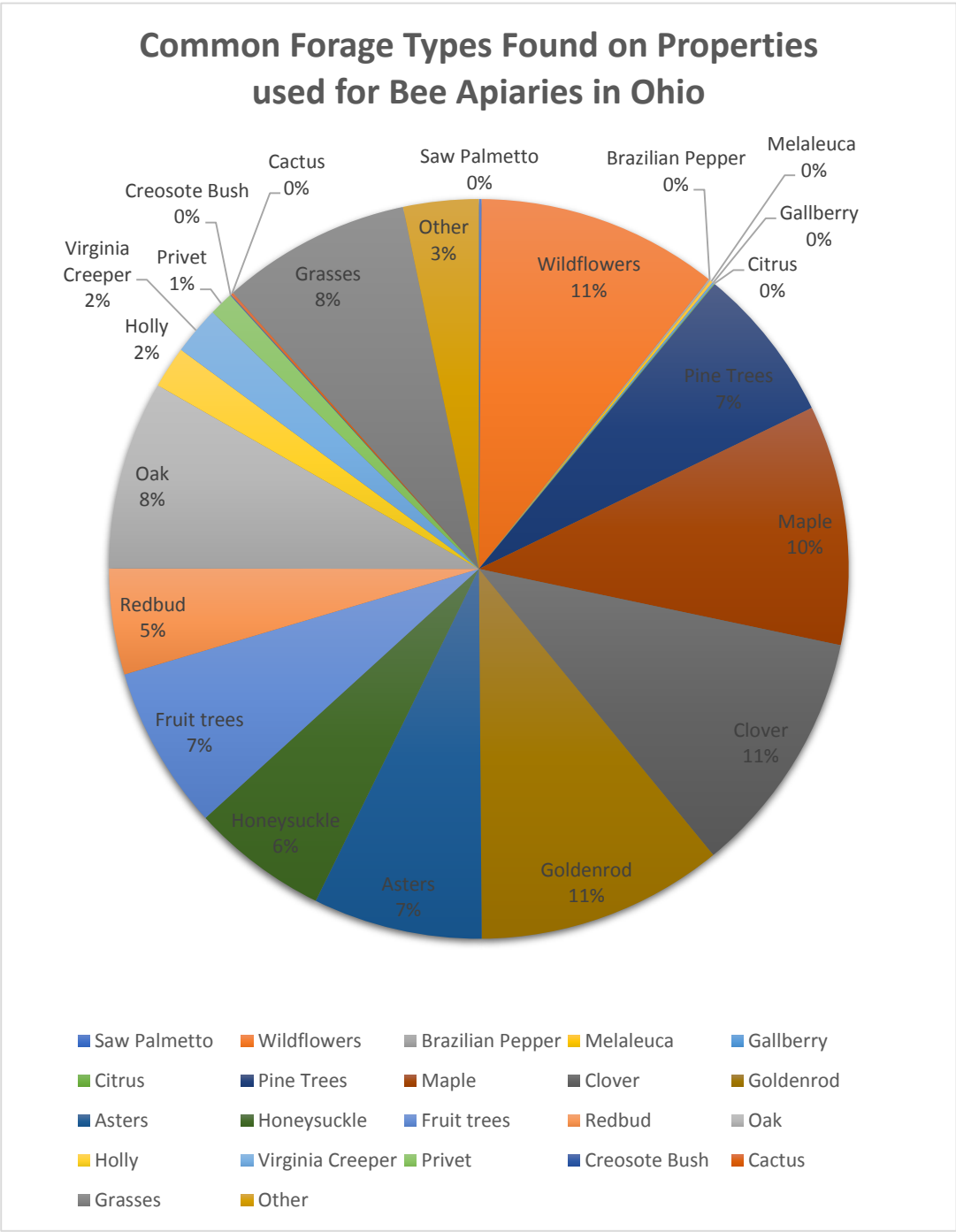
# NAPPC National Beekeeper Forage Survey

## Ohio (continued)



# NAPPC National Beekeeper Forage Survey

Ohio (continued)





# NAPPC National Beekeeper Forage Survey

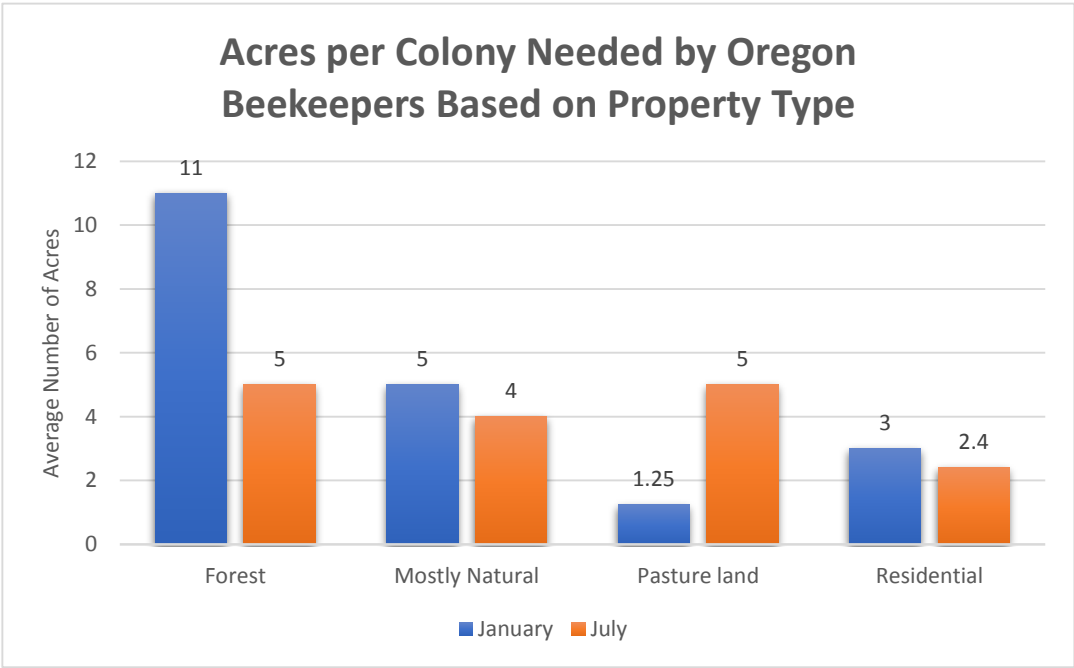
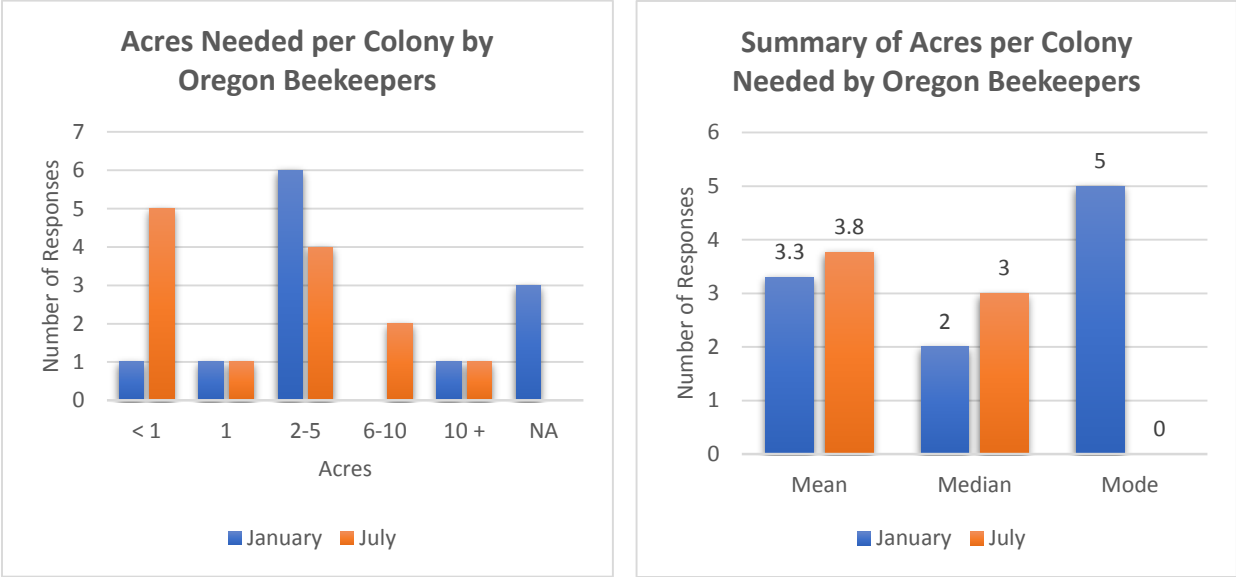
## Oklahoma

Not enough data was available for Oklahoma

# NAPPC National Beekeeper Forage Survey

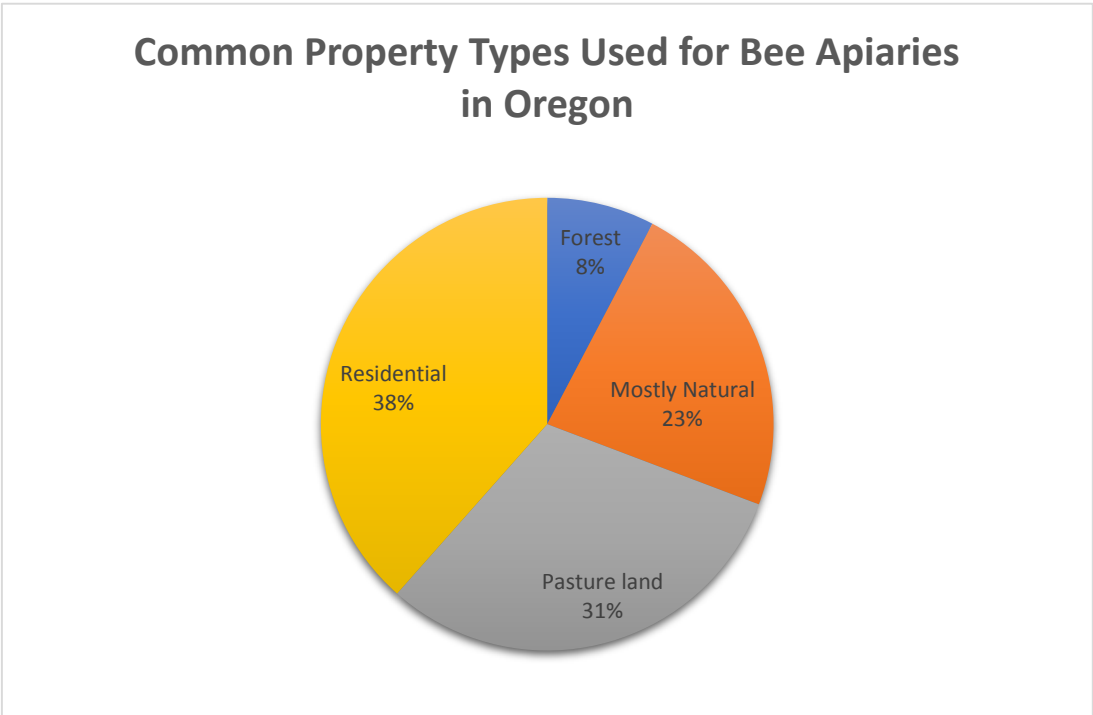
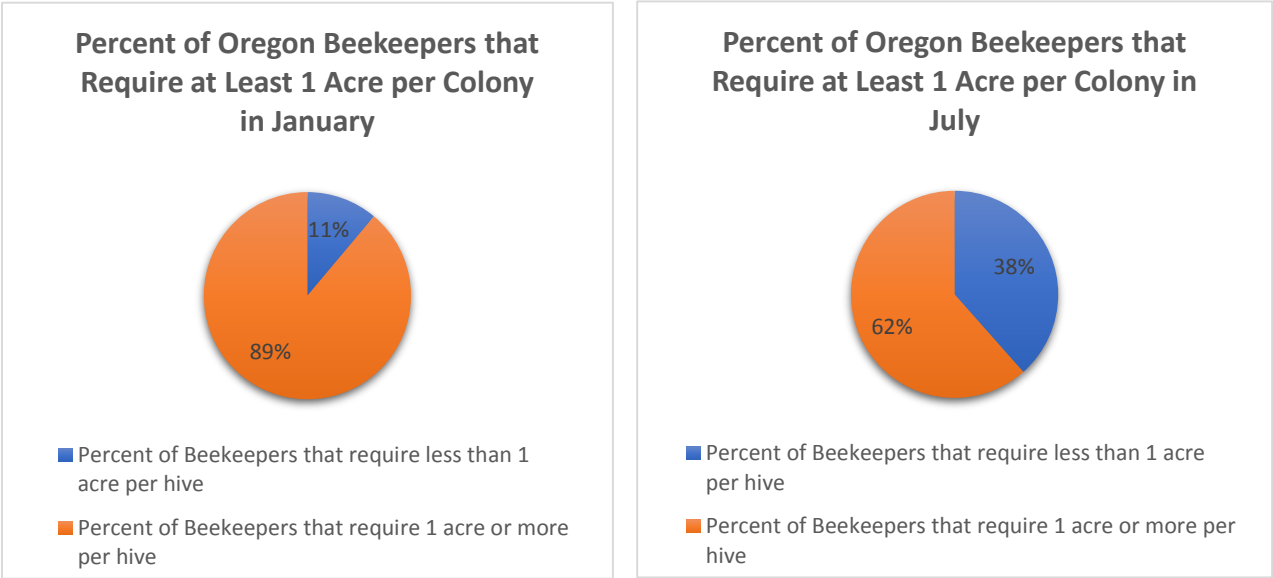
## Oregon

In Oregon, a total of 13 beekeepers responded to the survey.



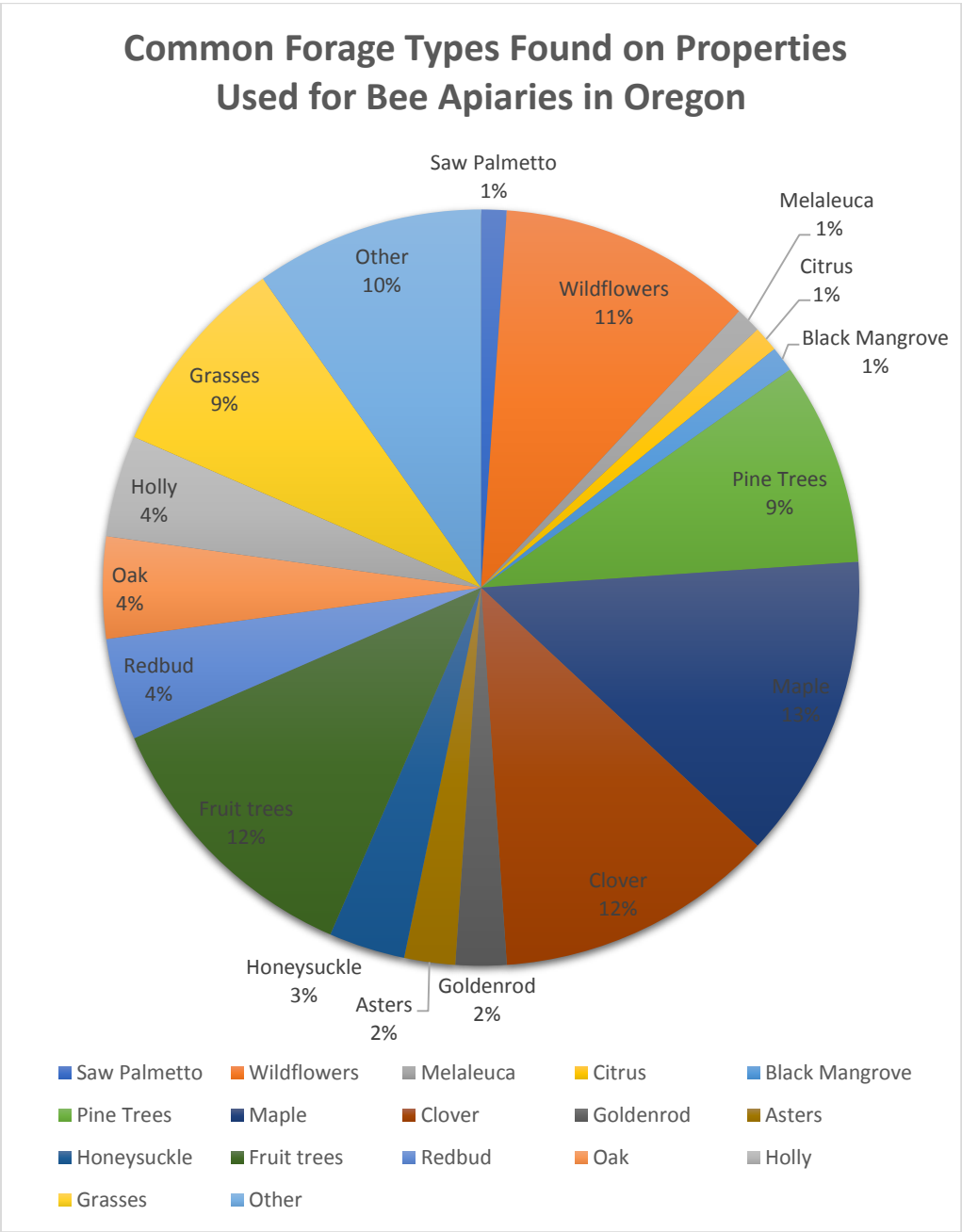
# NAPPC National Beekeeper Forage Survey

## Oregon (continued)



# NAPPC National Beekeeper Forage Survey

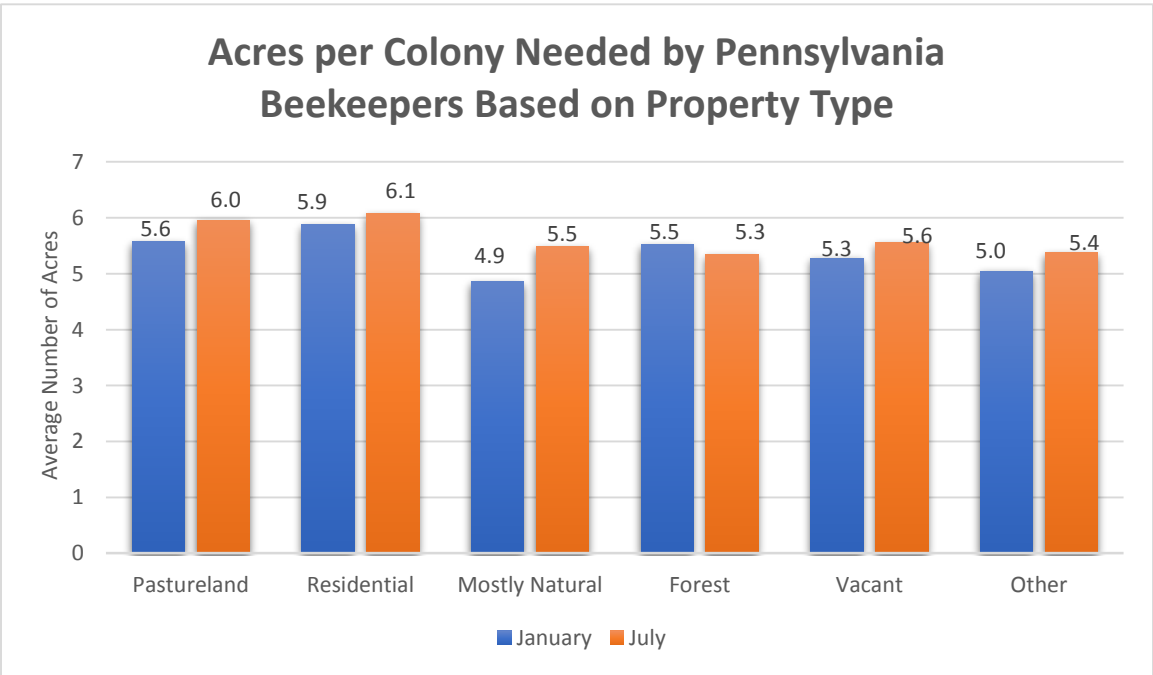
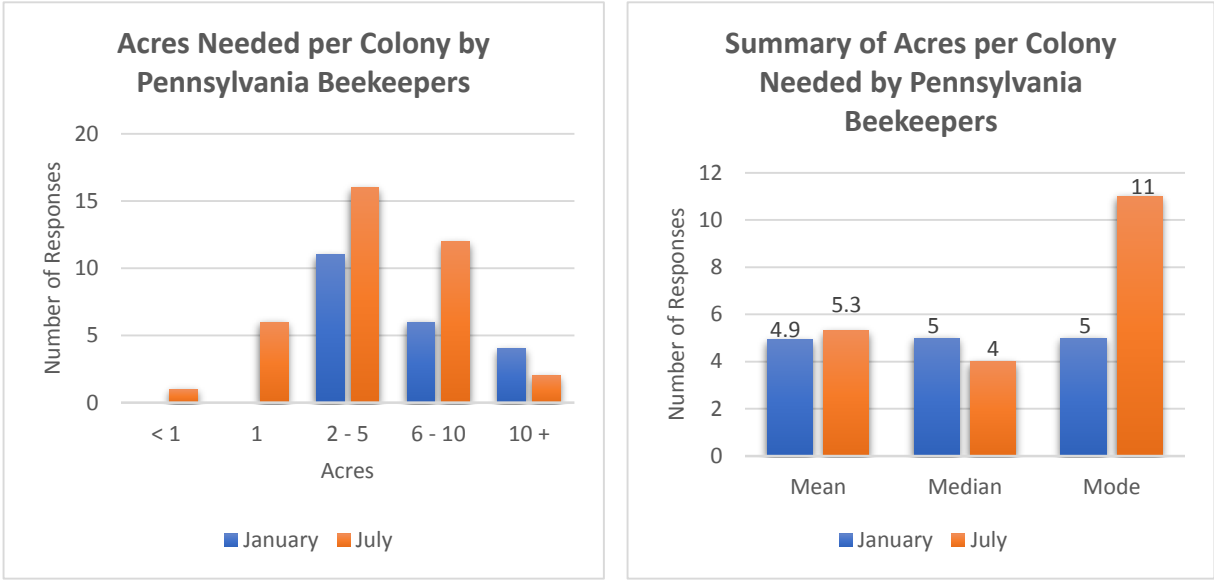
Oregon (continued)



# NAPPC National Beekeeper Forage Survey

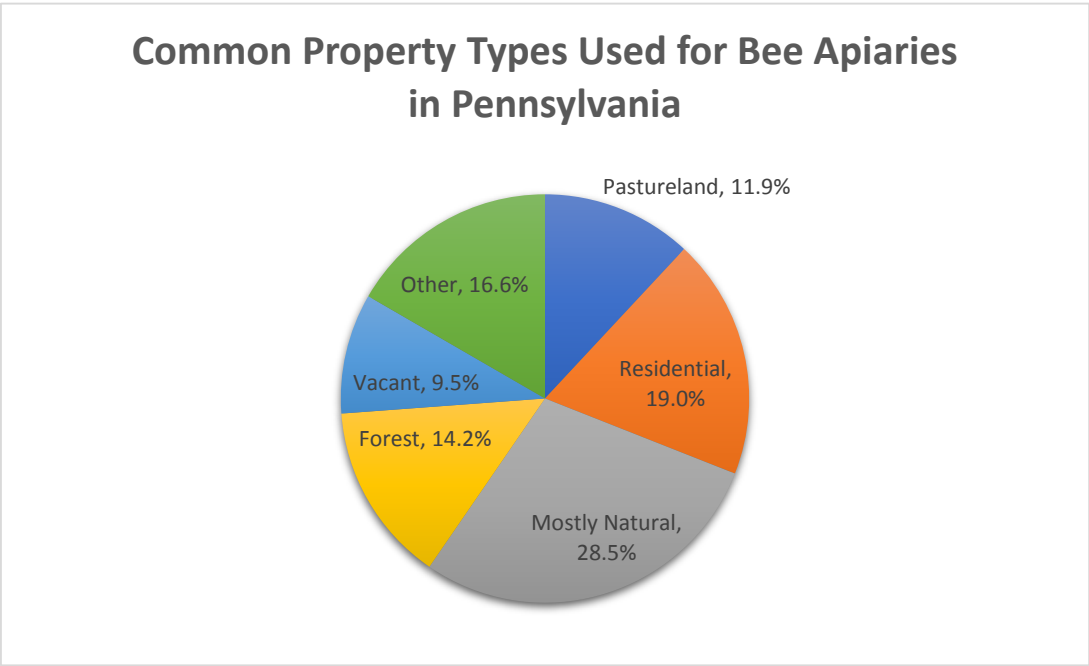
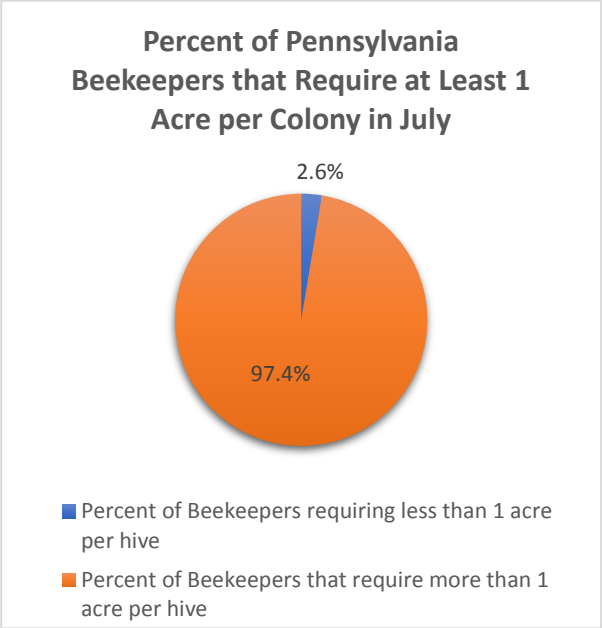
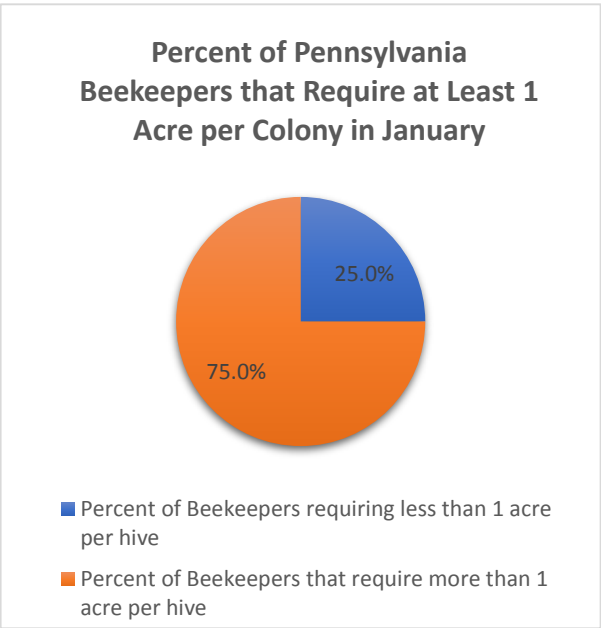
## Pennsylvania

In Pennsylvania, a total of 42 beekeepers responded to the survey.



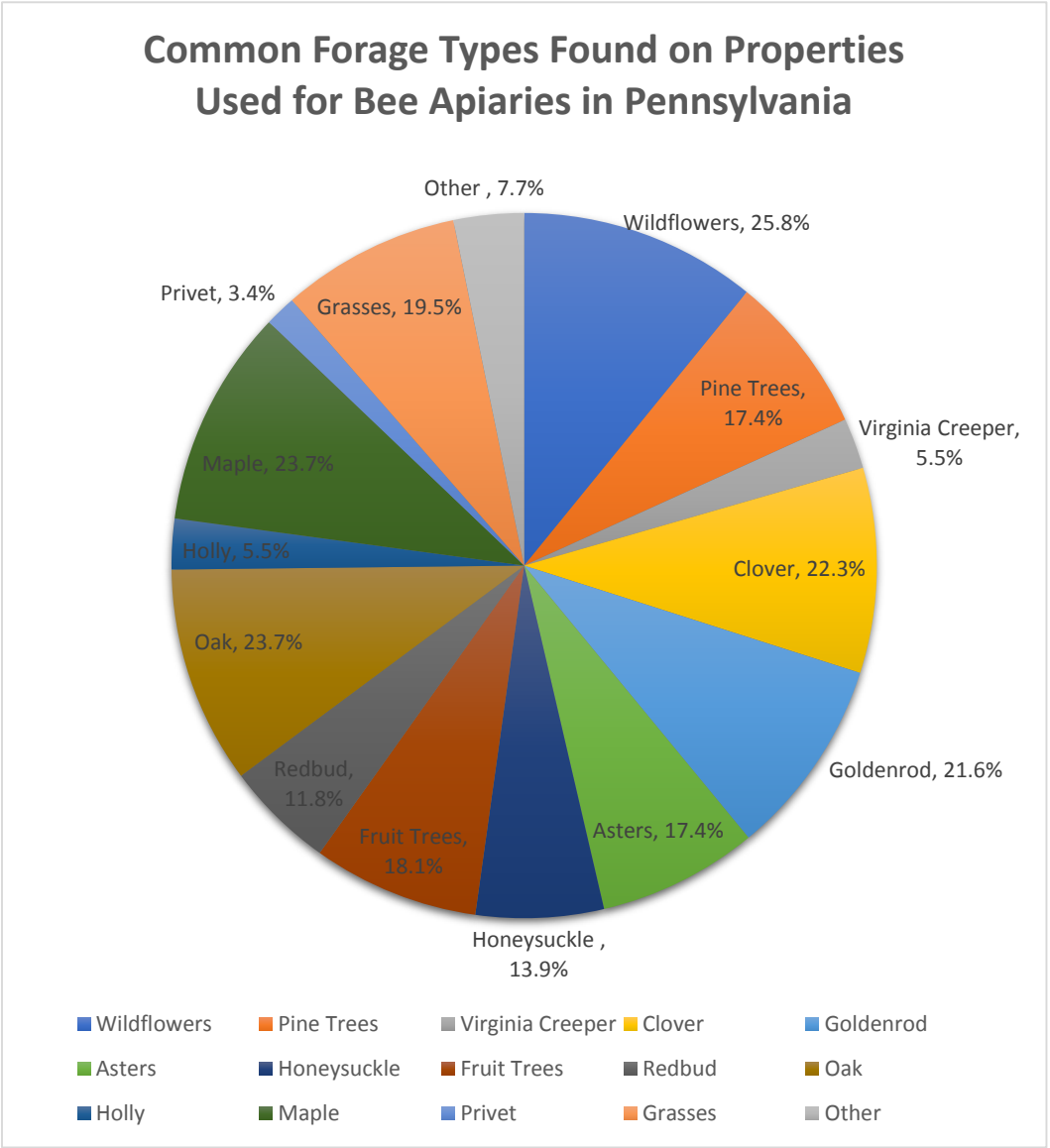
# NAPPC National Beekeeper Forage Survey

## Pennsylvania (continued)



# NAPPC National Beekeeper Forage Survey

Pennsylvania (continued)



# NAPPC National Beekeeper Forage Survey

## Rhode Island

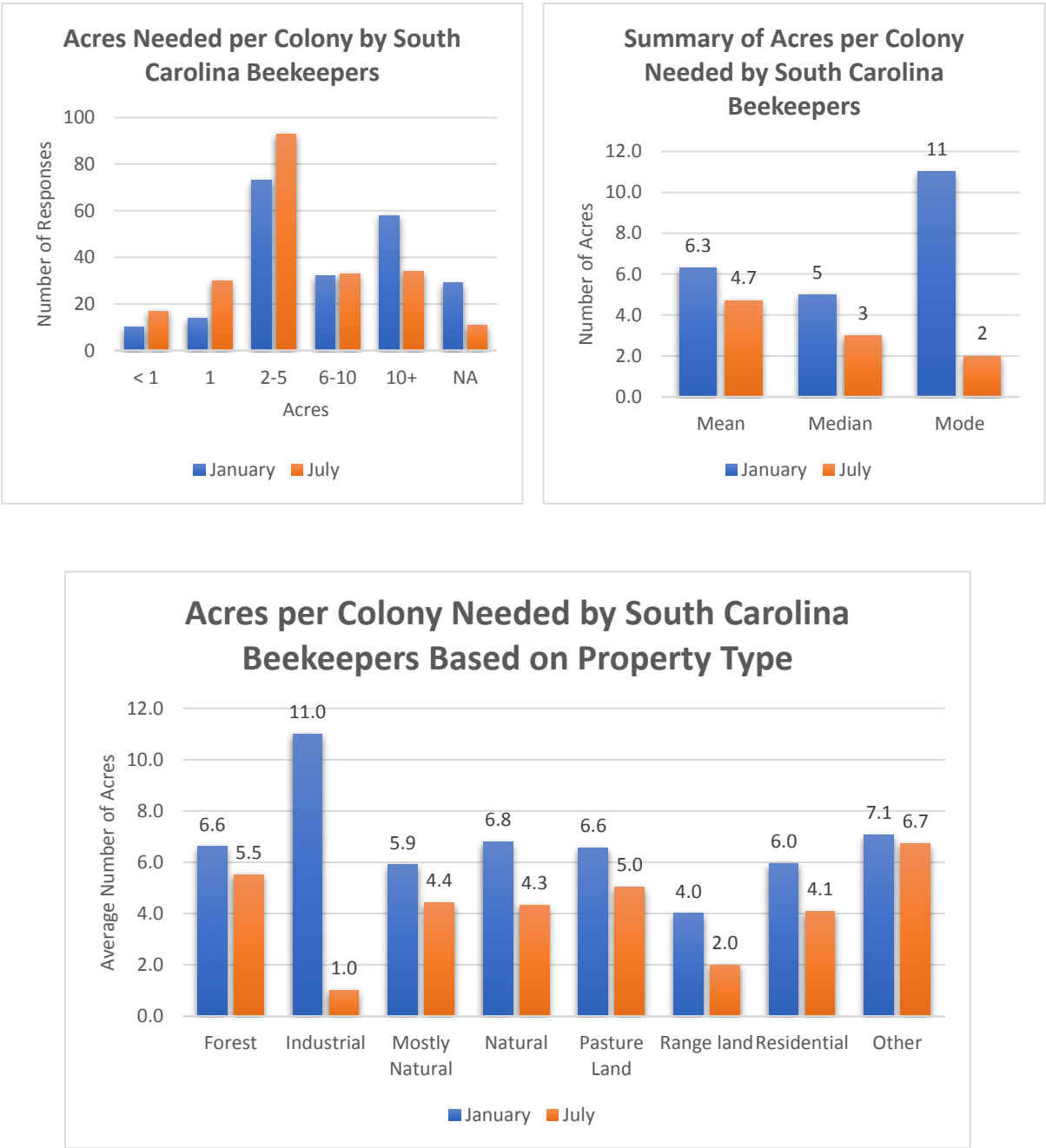
Not enough data was available for Rhode Island.



# NAPPC National Beekeeper Forage Survey

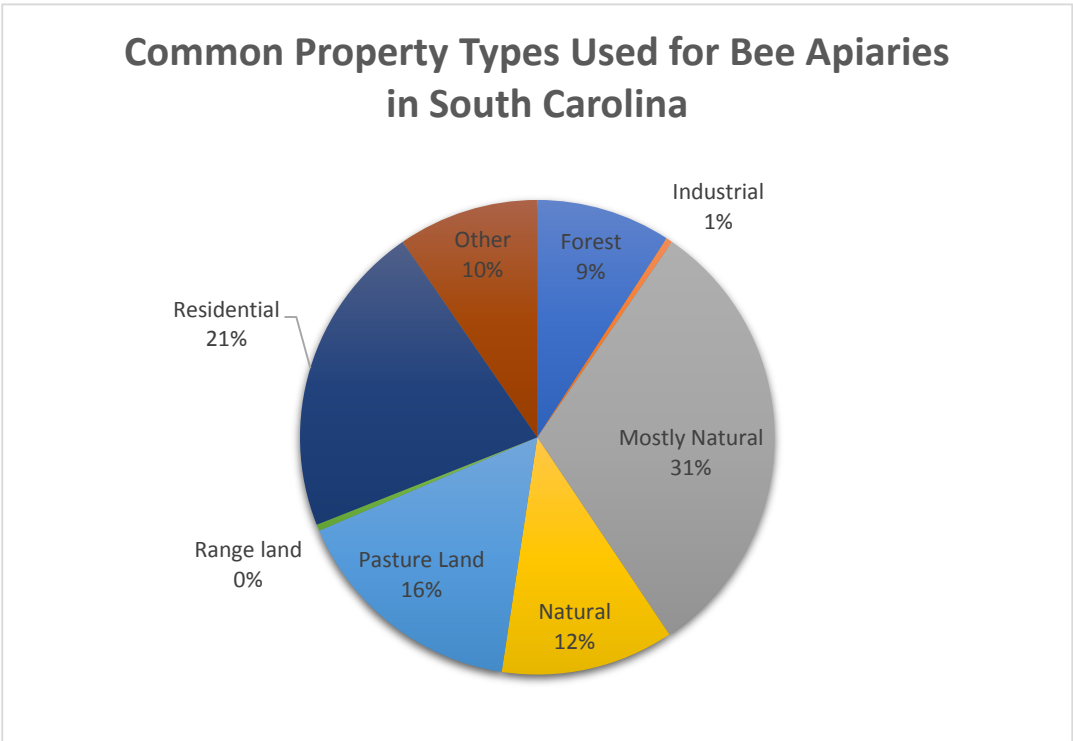
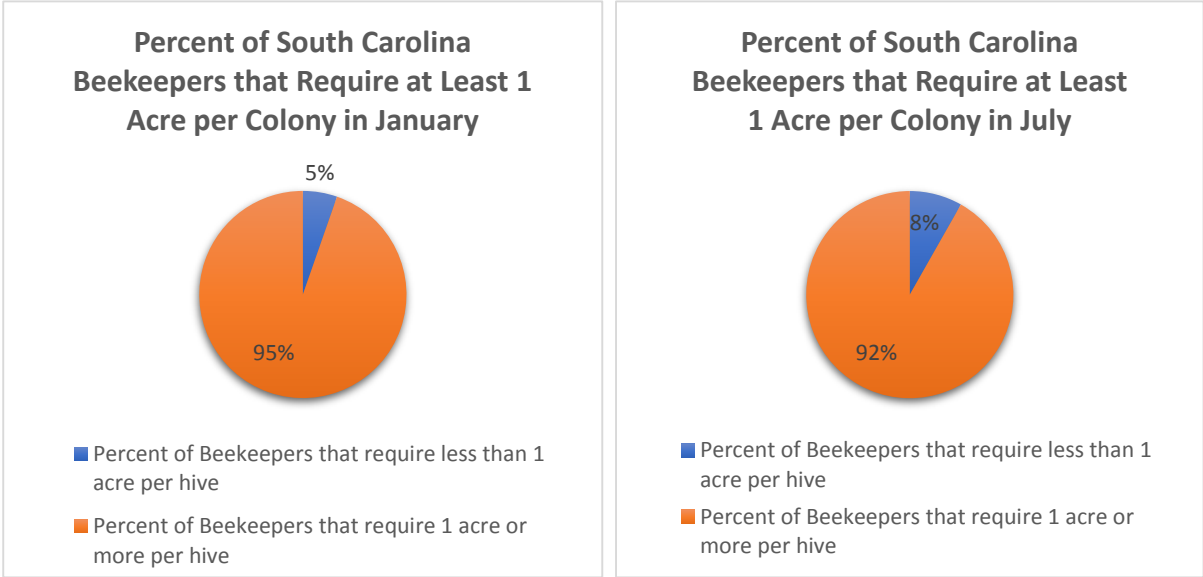
## South Carolina

In South Carolina, a total of 229 beekeepers responded to the survey.



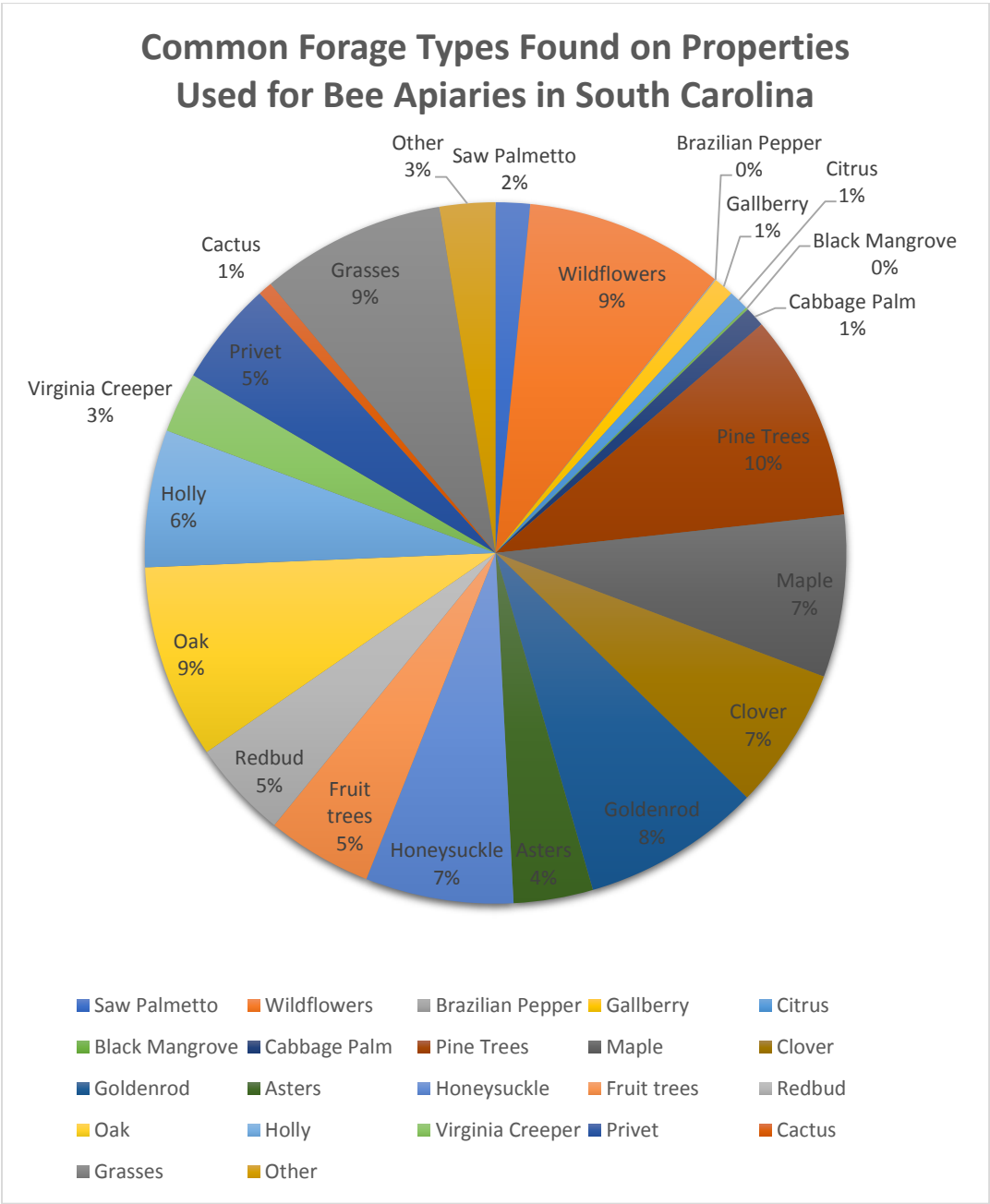
# NAPPC National Beekeeper Forage Survey

## South Carolina (continued)



# NAPPC National Beekeeper Forage Survey

## South Carolina (continued)



# NAPPC National Beekeeper Forage Survey

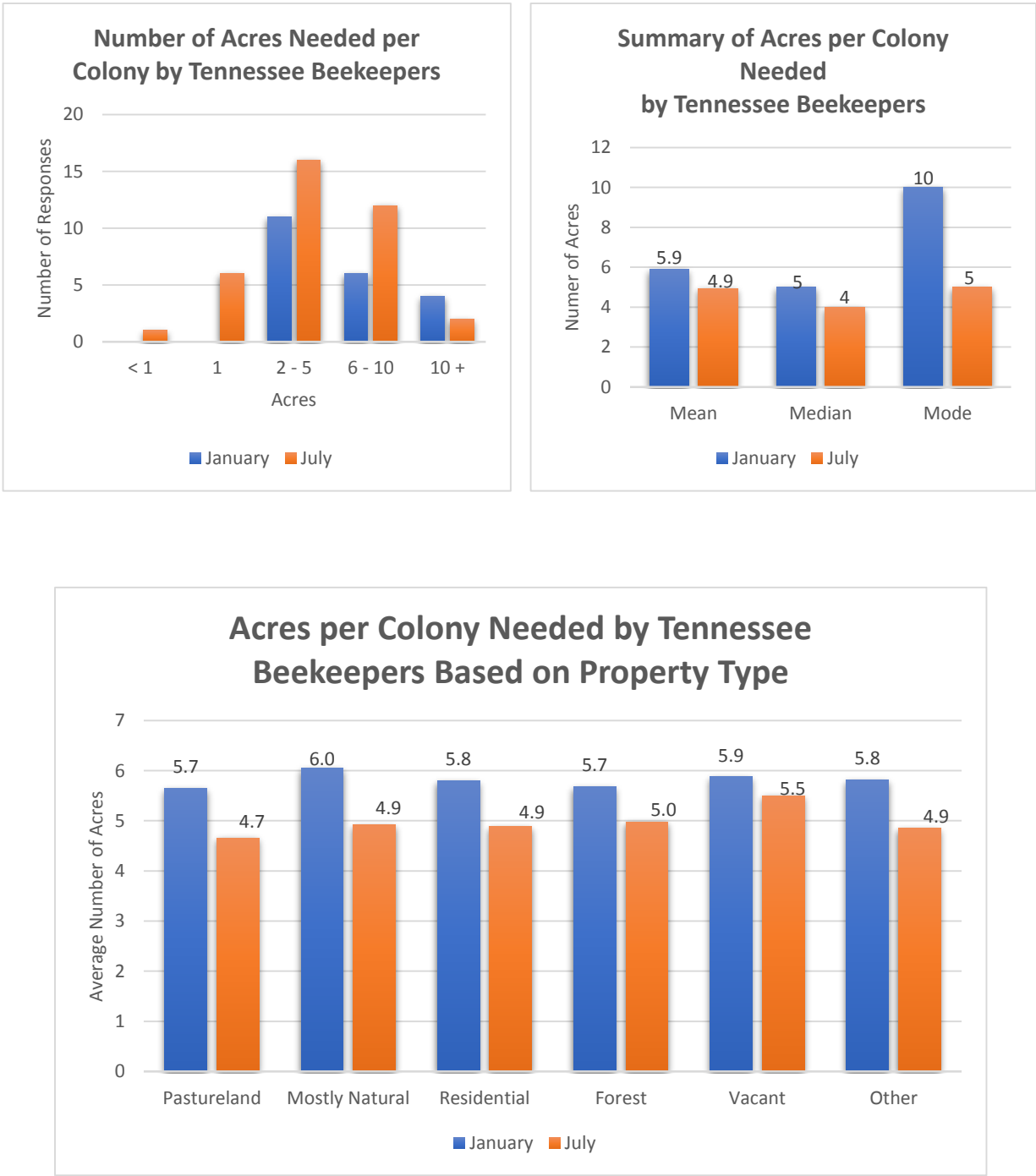
## South Dakota

No Data was available for South Dakota.

# NAPPC National Beekeeper Forage Survey

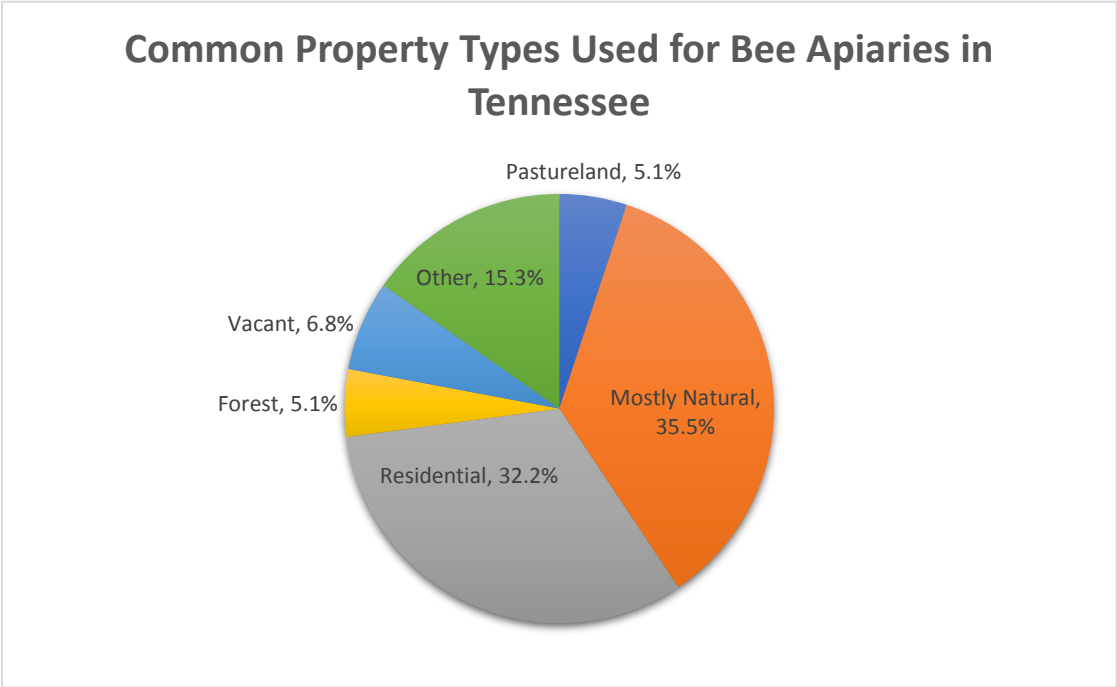
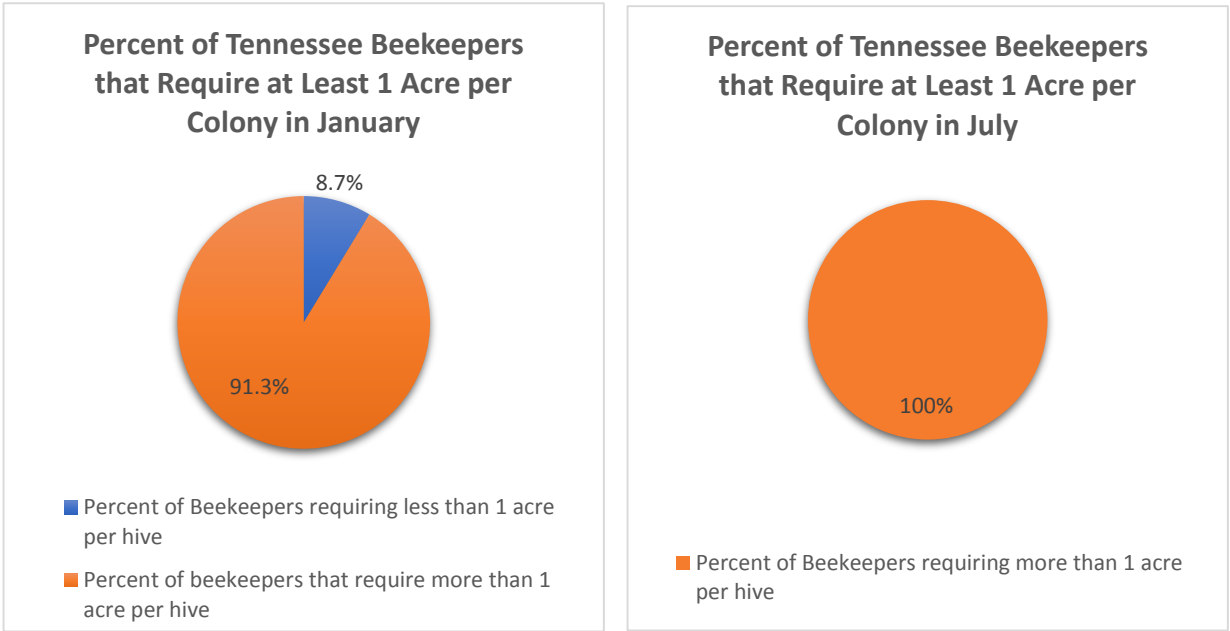
## Tennessee

In Tennessee, a total of 59 beekeepers responded to the survey.



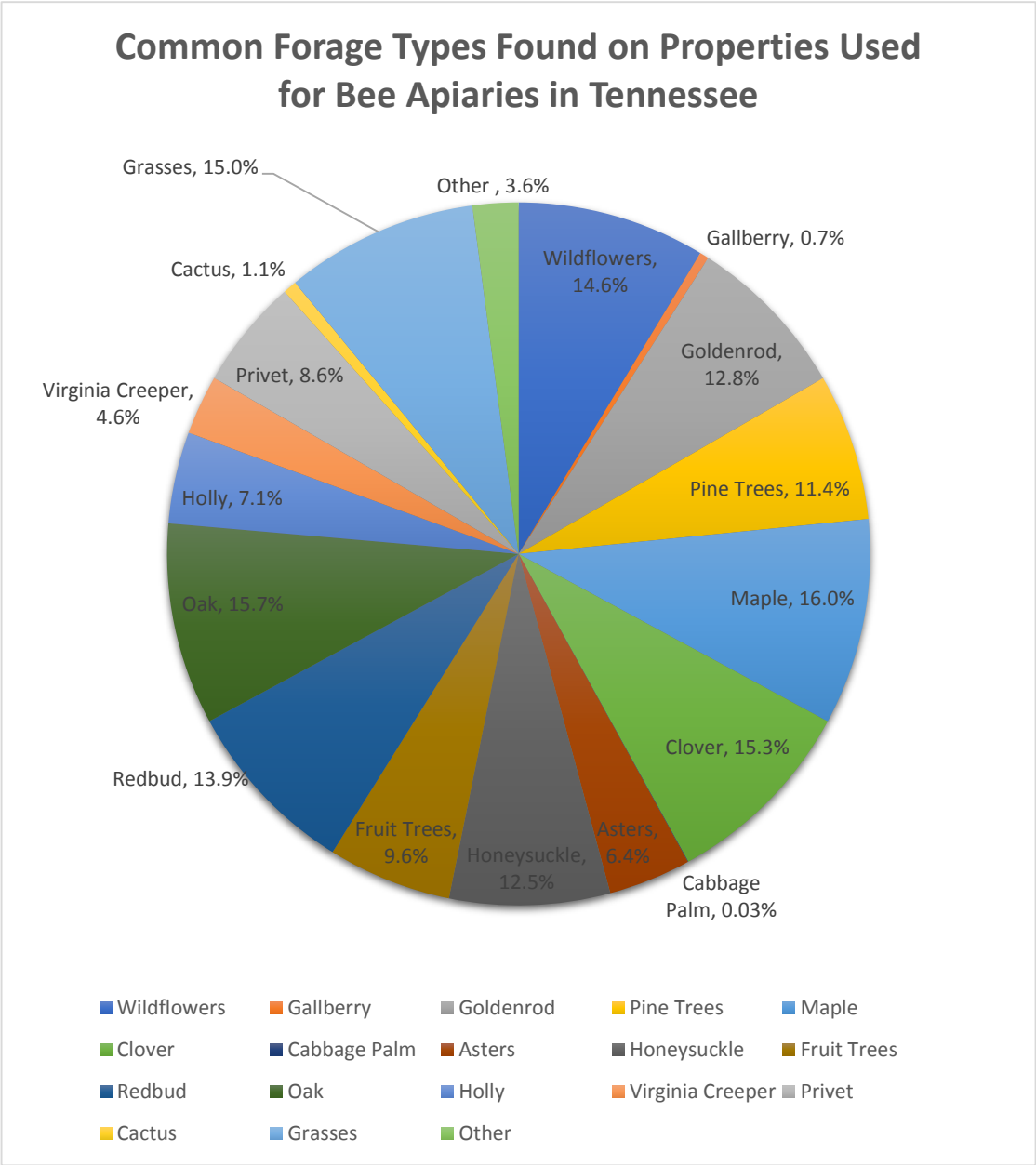
# NAPPC National Beekeeper Forage Survey

## Tennessee (continued)



# NAPPC National Beekeeper Forage Survey

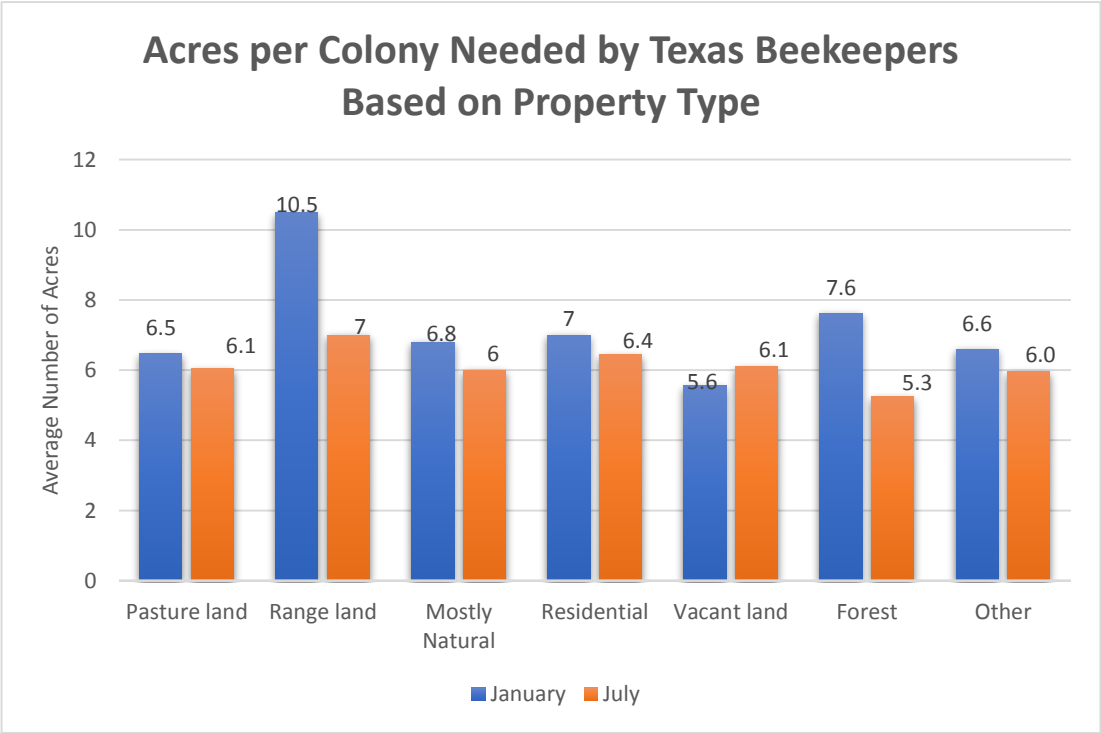
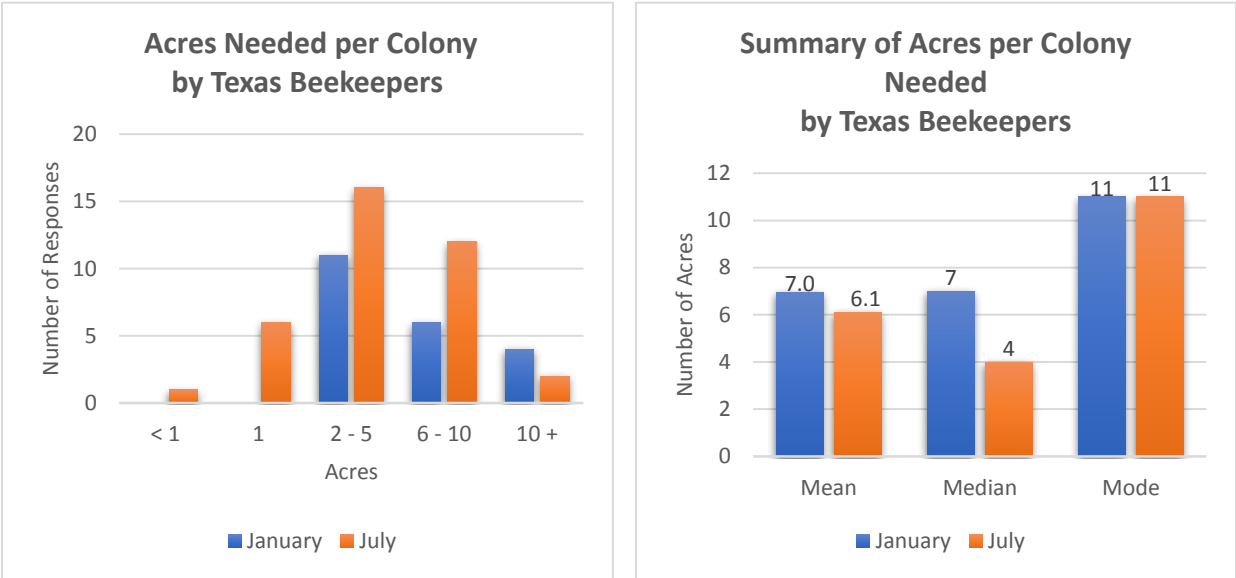
Tennessee (continued)



# NAPPC National Beekeeper Forage Survey

## Texas

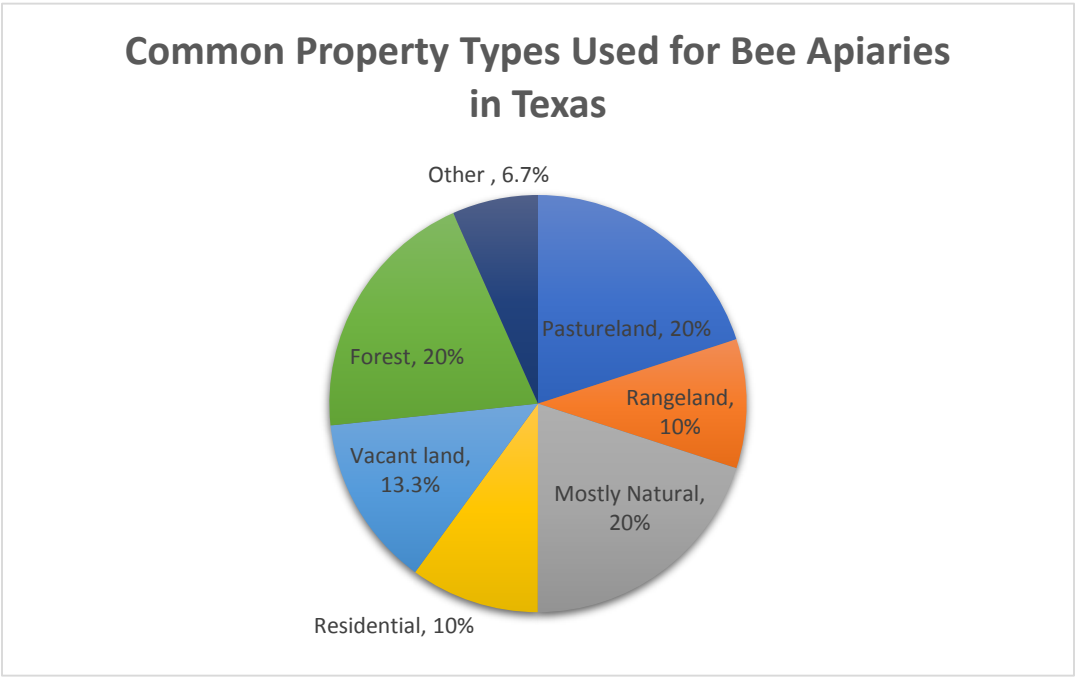
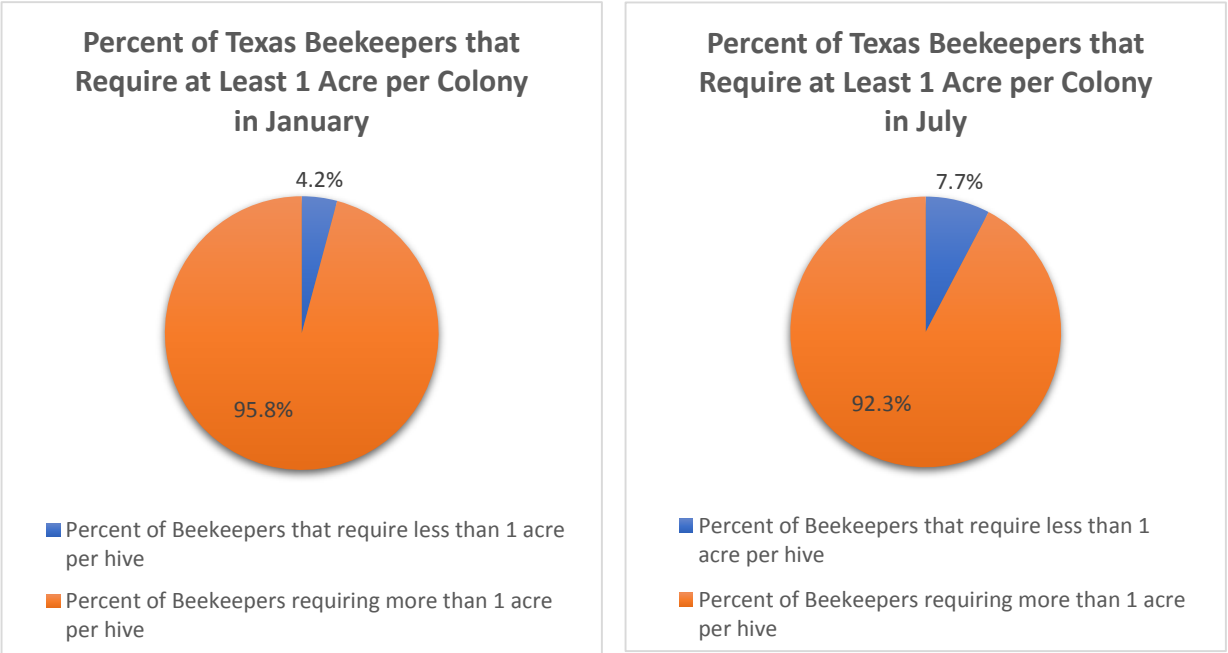
In Texas, a total of 30 beekeepers responded to the survey.





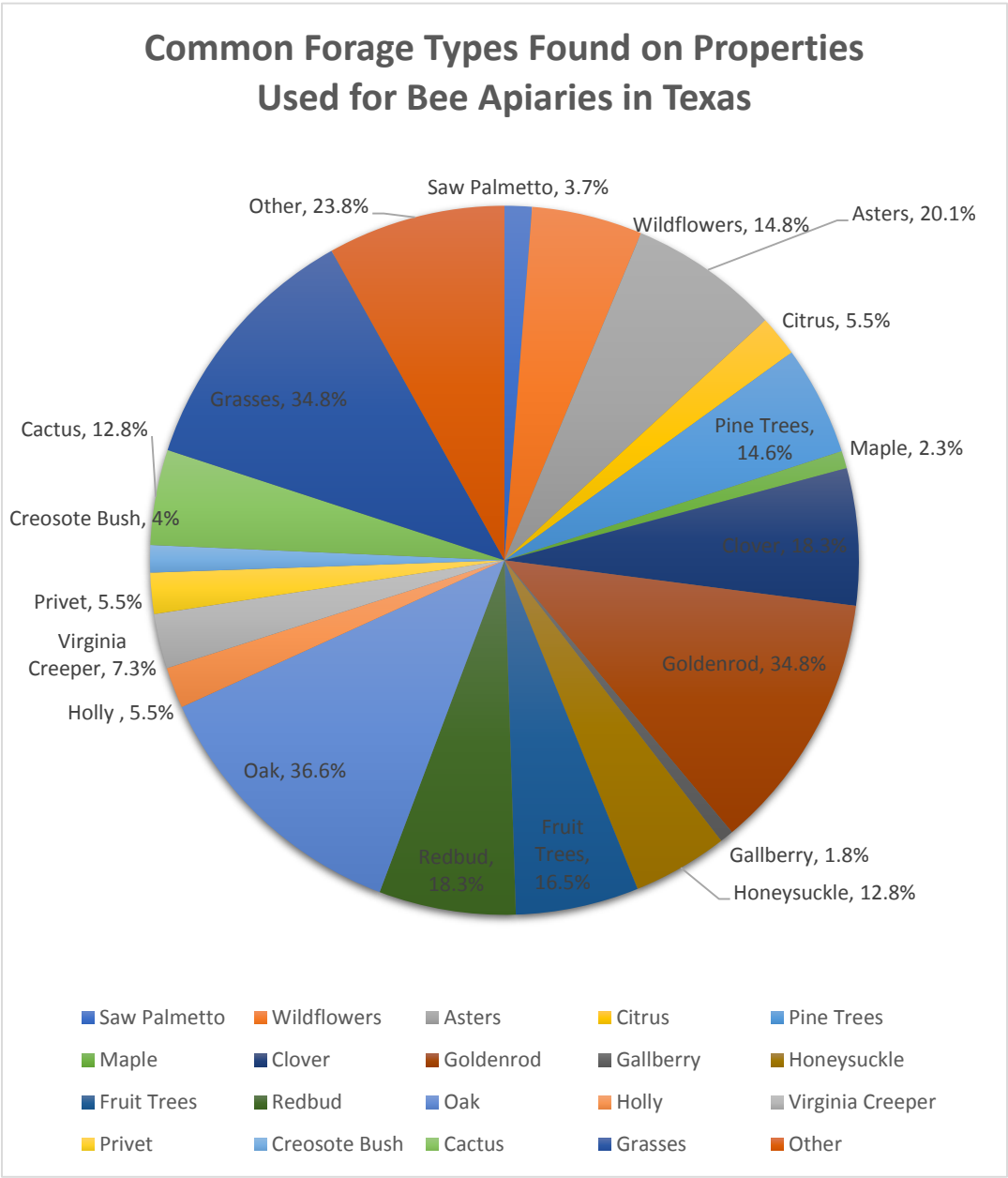
# NAPPC National Beekeeper Forage Survey

## Texas (continued)



# NAPPC National Beekeeper Forage Survey

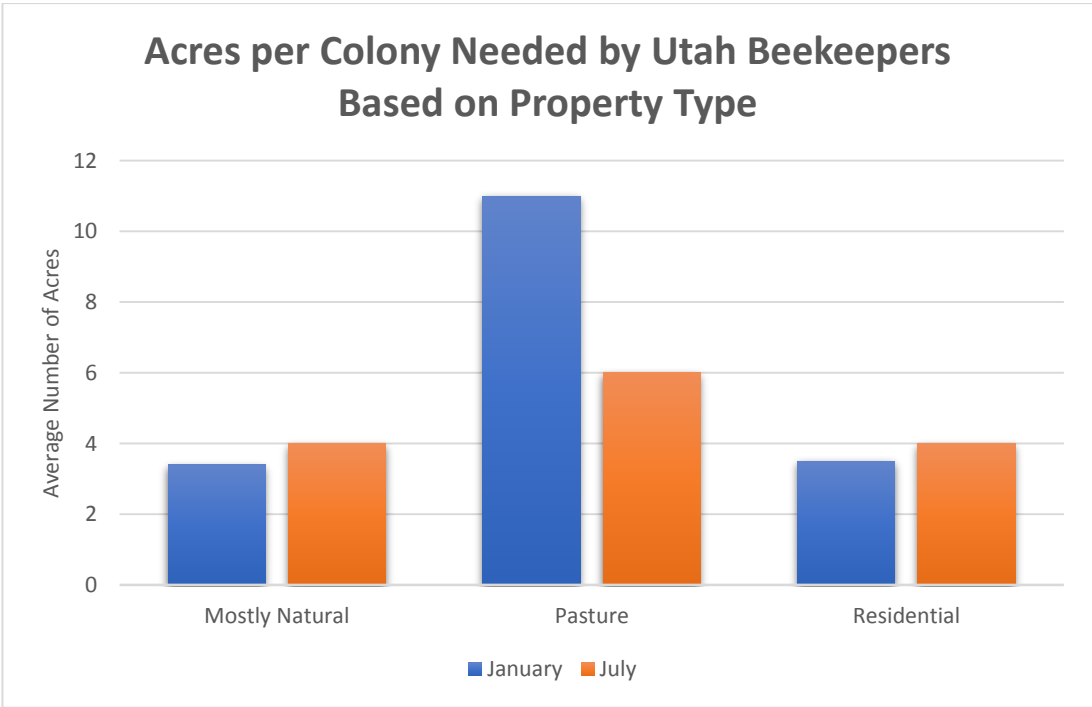
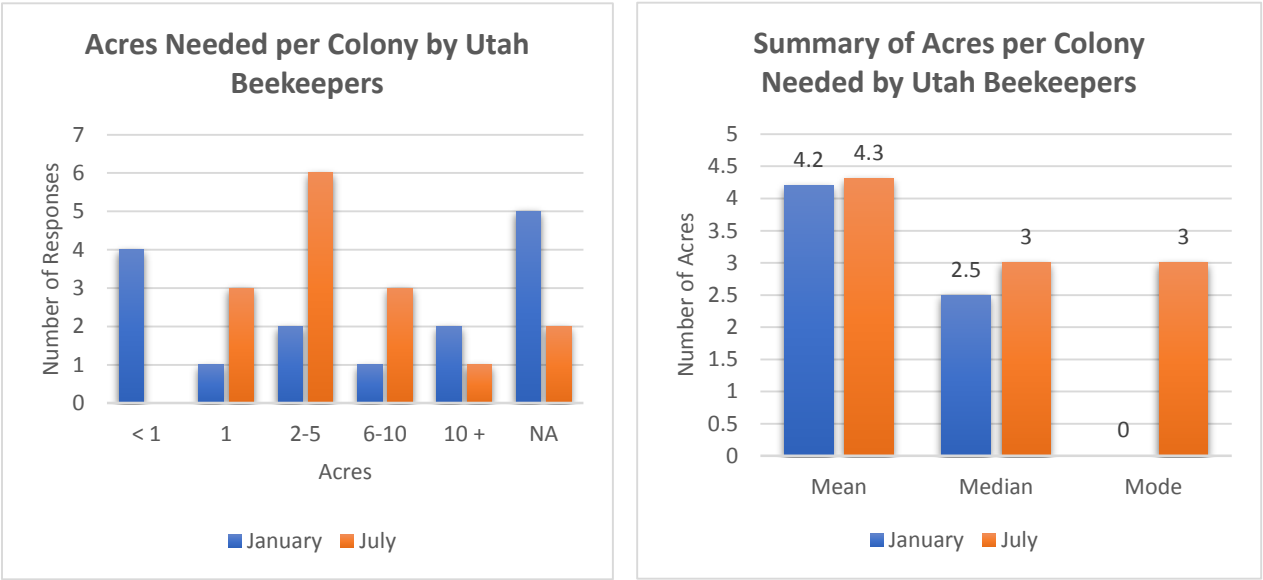
Texas (continued)



# NAPPC National Beekeeper Forage Survey

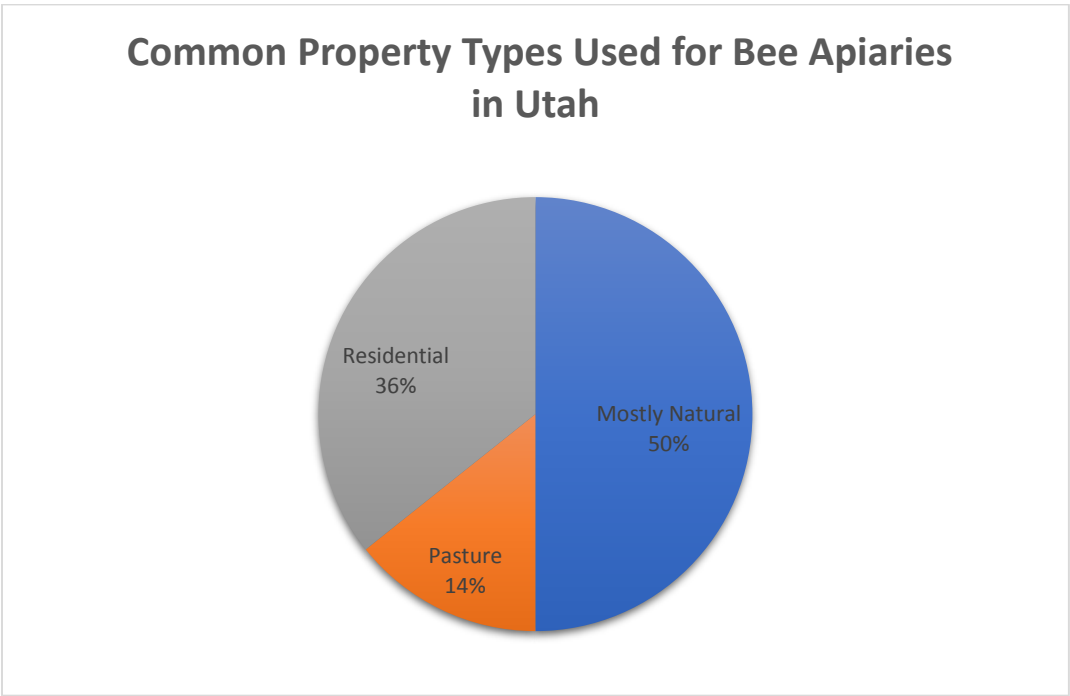
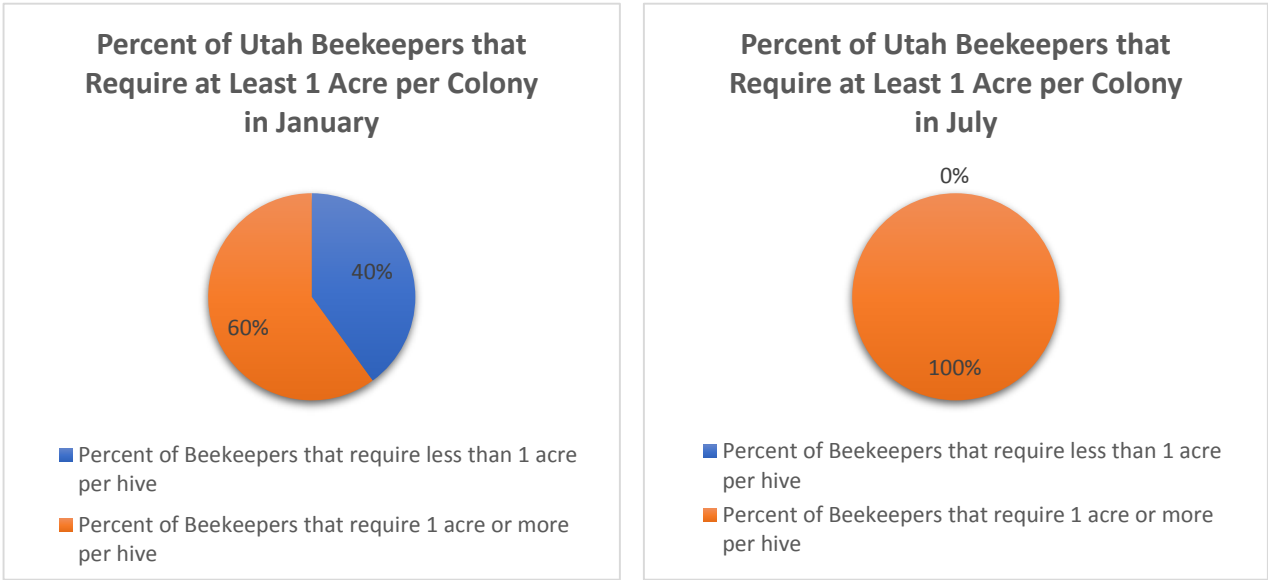
## Utah

In Utah, a total of 15 beekeepers responded to the survey.



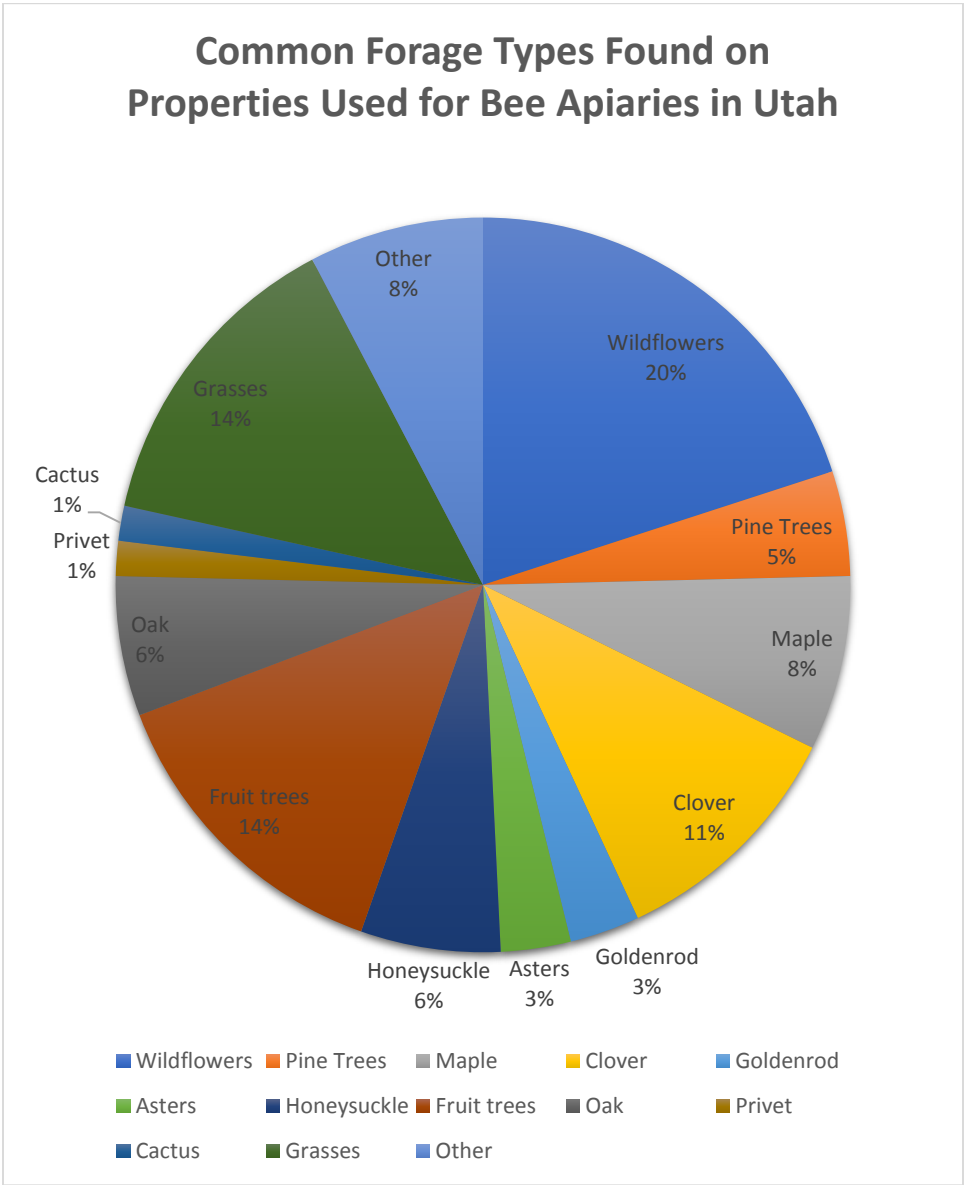
# NAPPC National Beekeeper Forage Survey

## Utah (continued)



# NAPPC National Beekeeper Forage Survey

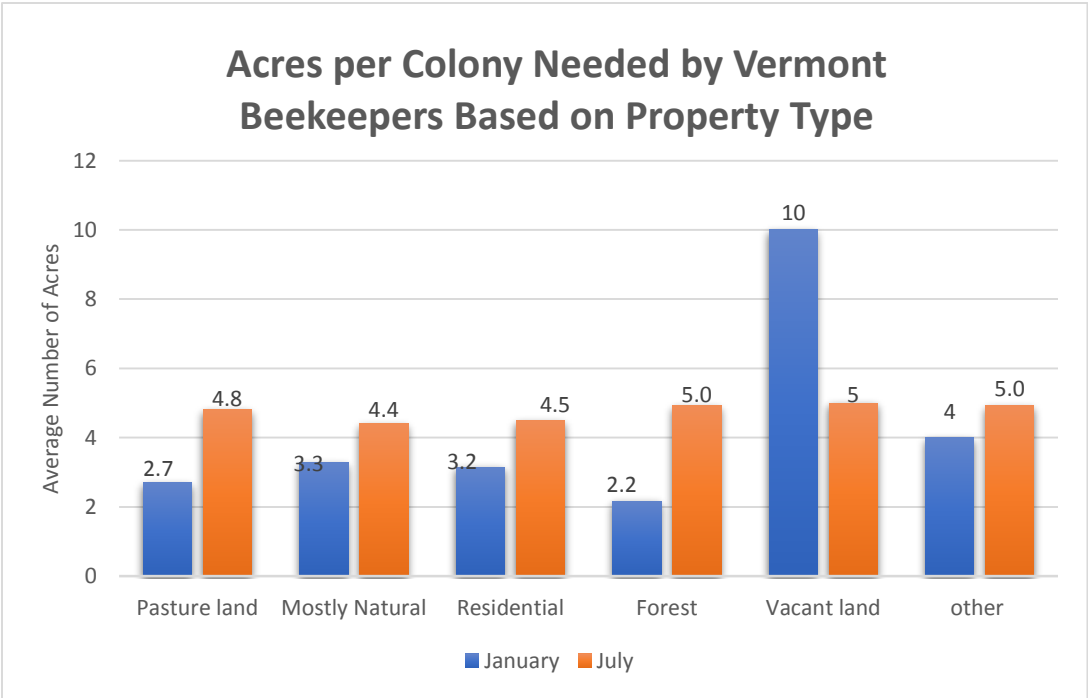
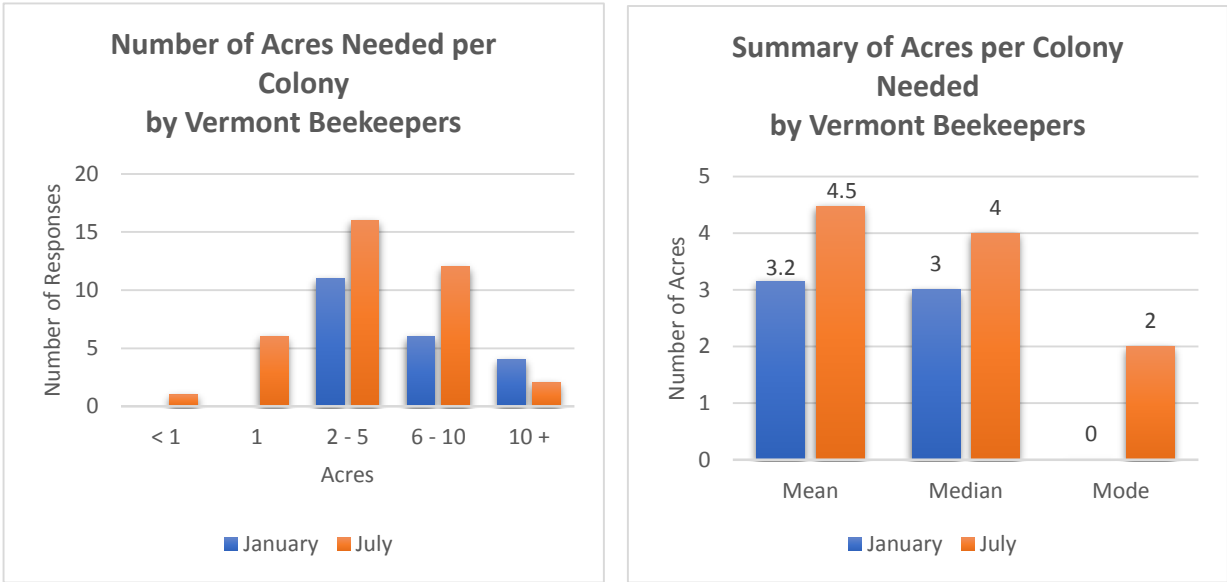
Utah (continued)



# NAPPC National Beekeeper Forage Survey

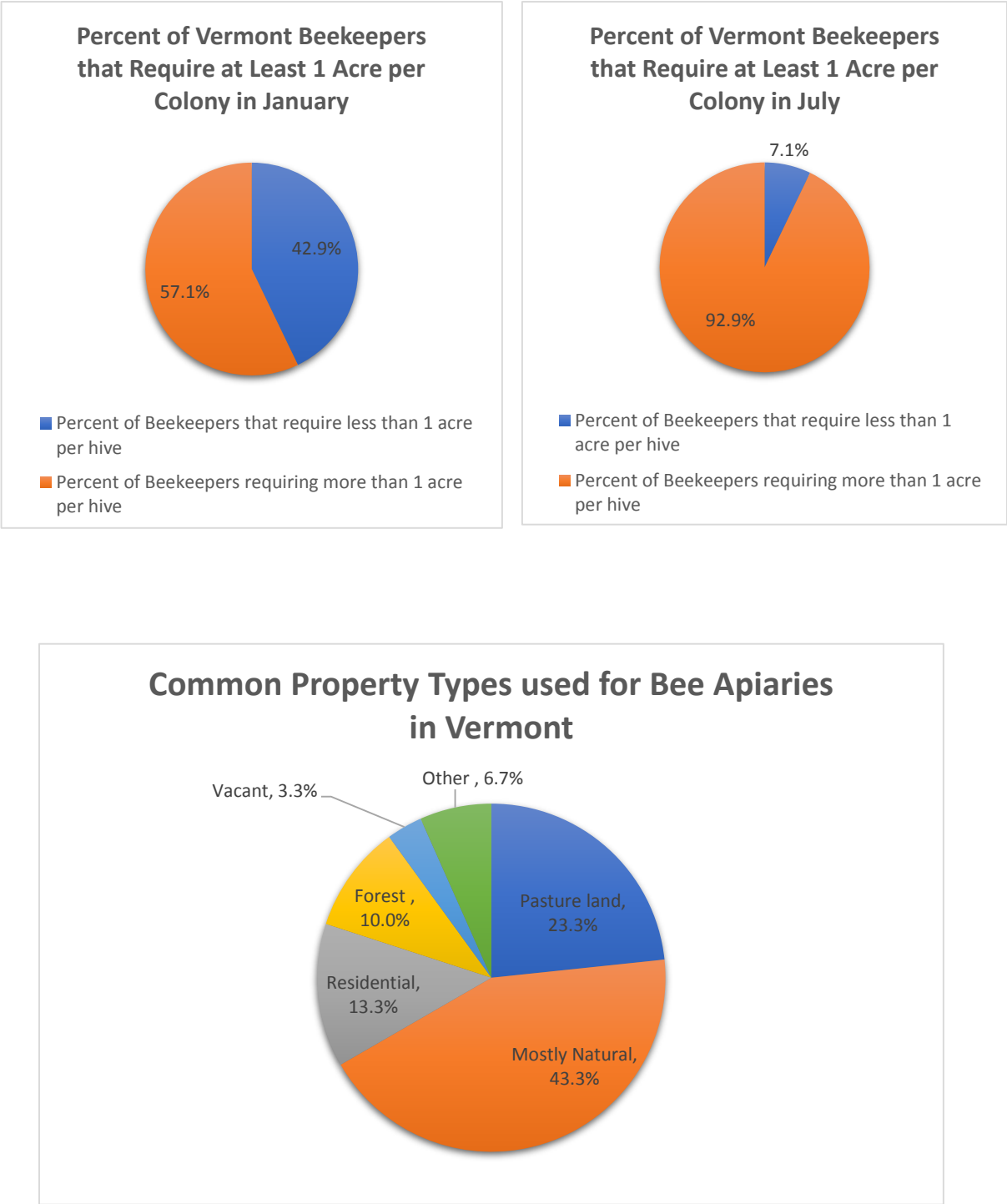
## Vermont

In Vermont, a total of 30 beekeepers responded to the survey.



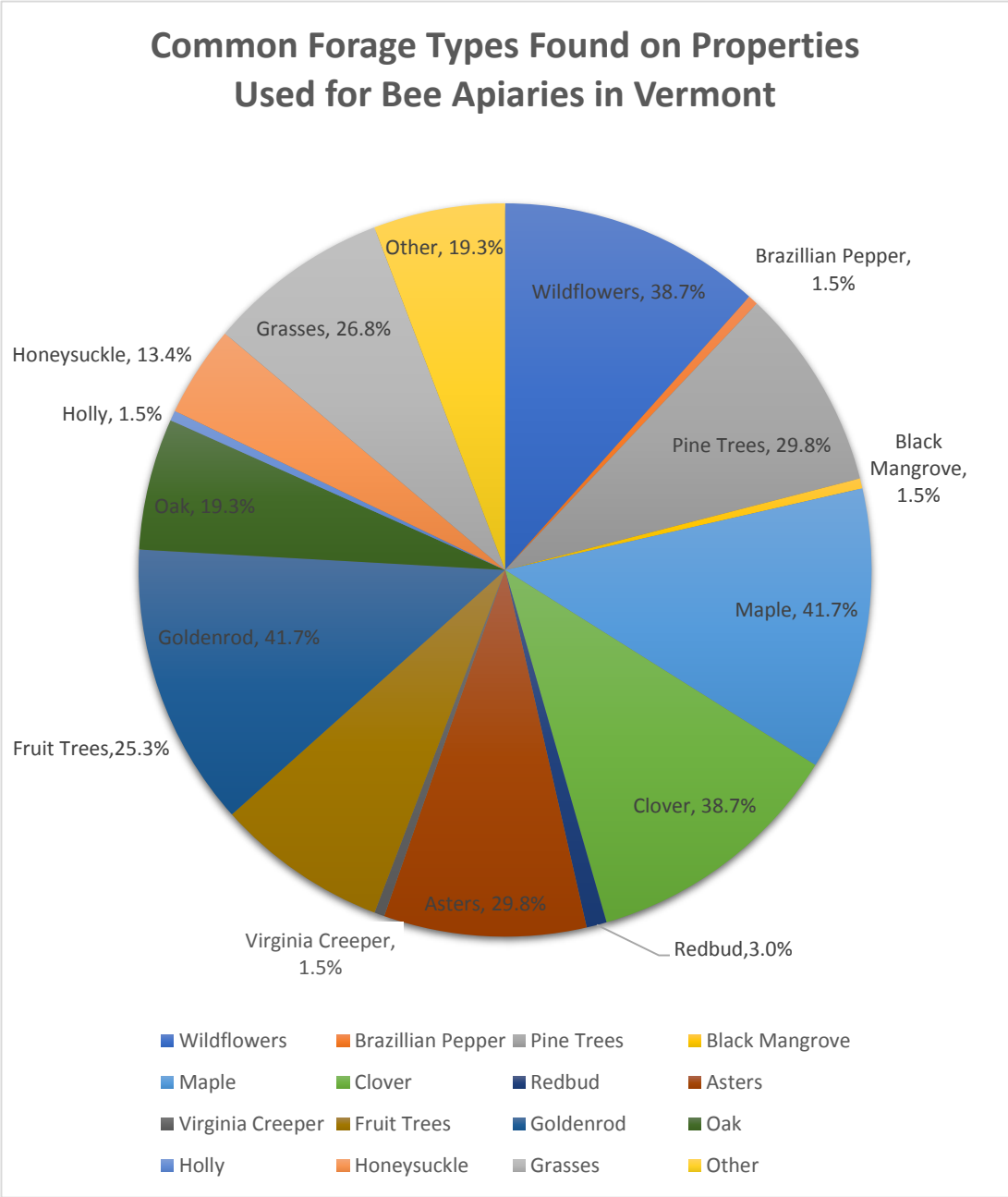
# NAPPC National Beekeeper Forage Survey

## Vermont (continued)



# NAPPC National Beekeeper Forage Survey

Vermont (continued)

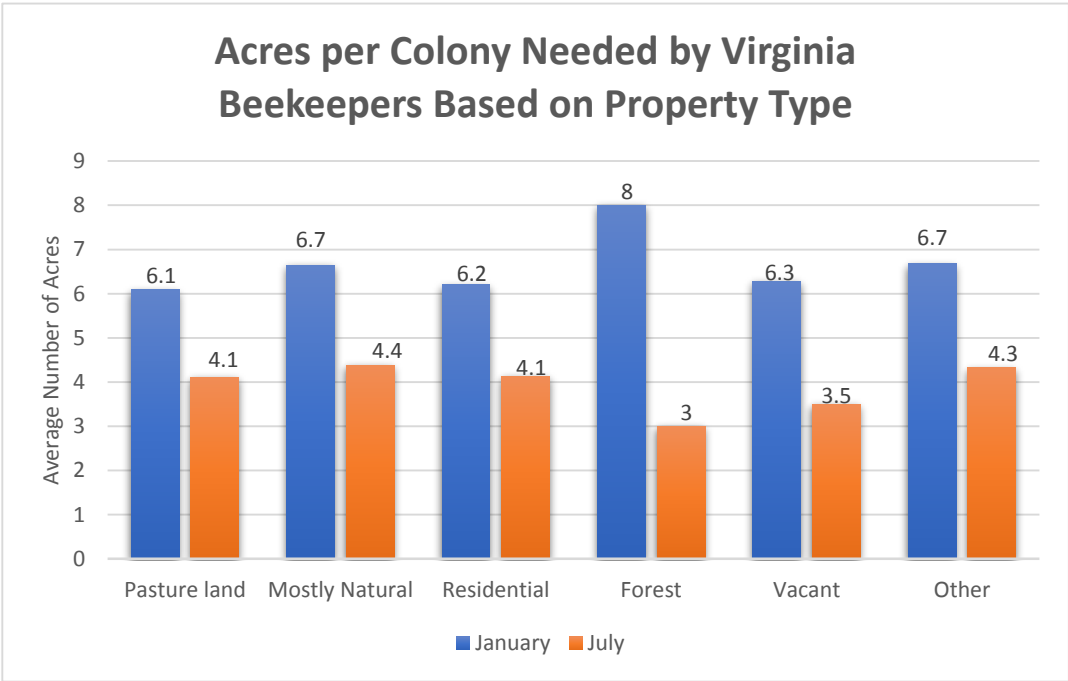
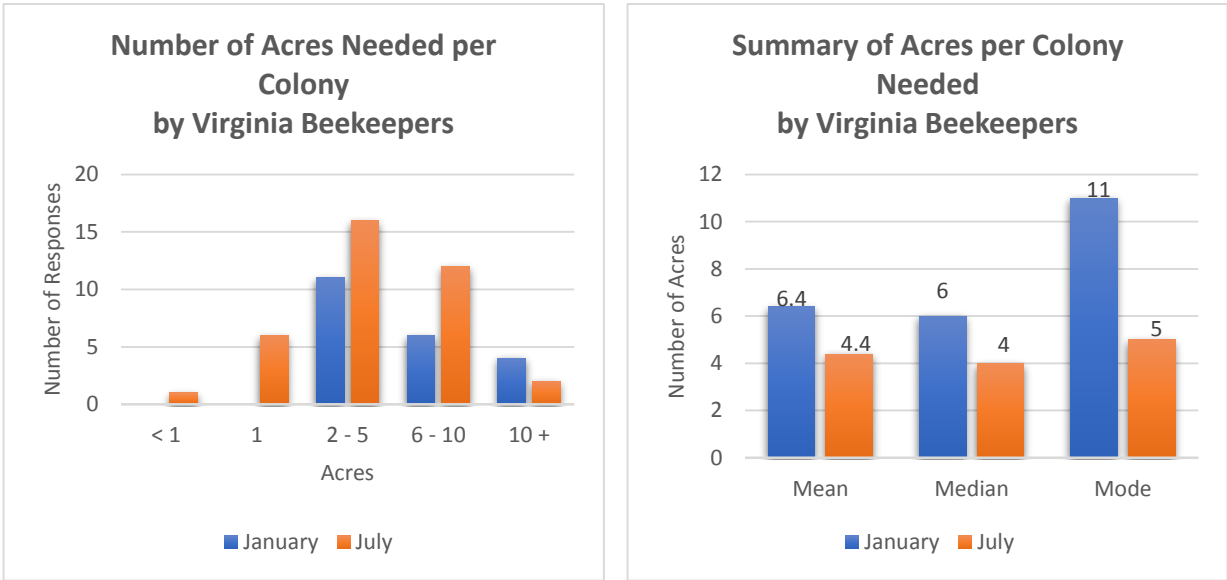




# NAPPC National Beekeeper Forage Survey

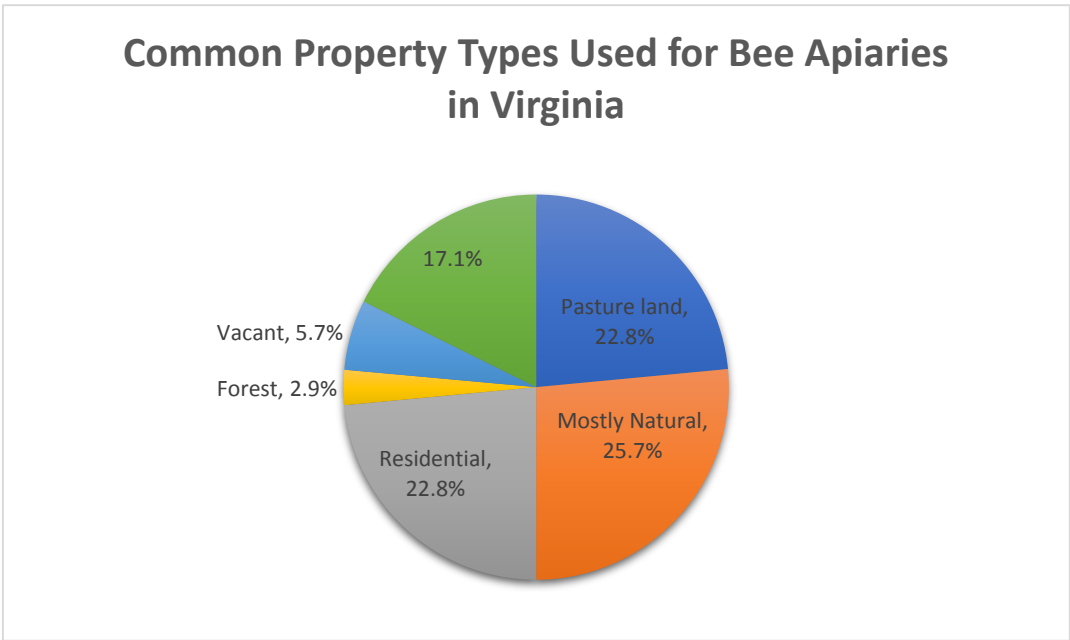
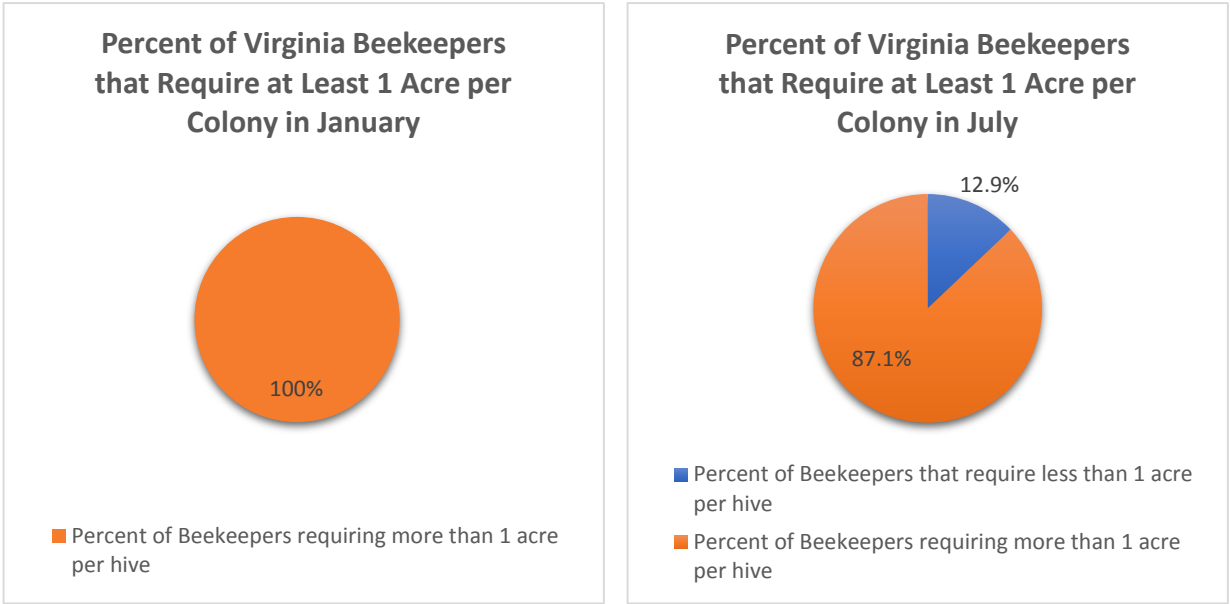
## Virginia

In Virginia, a total of 30 beekeepers responded to the survey.



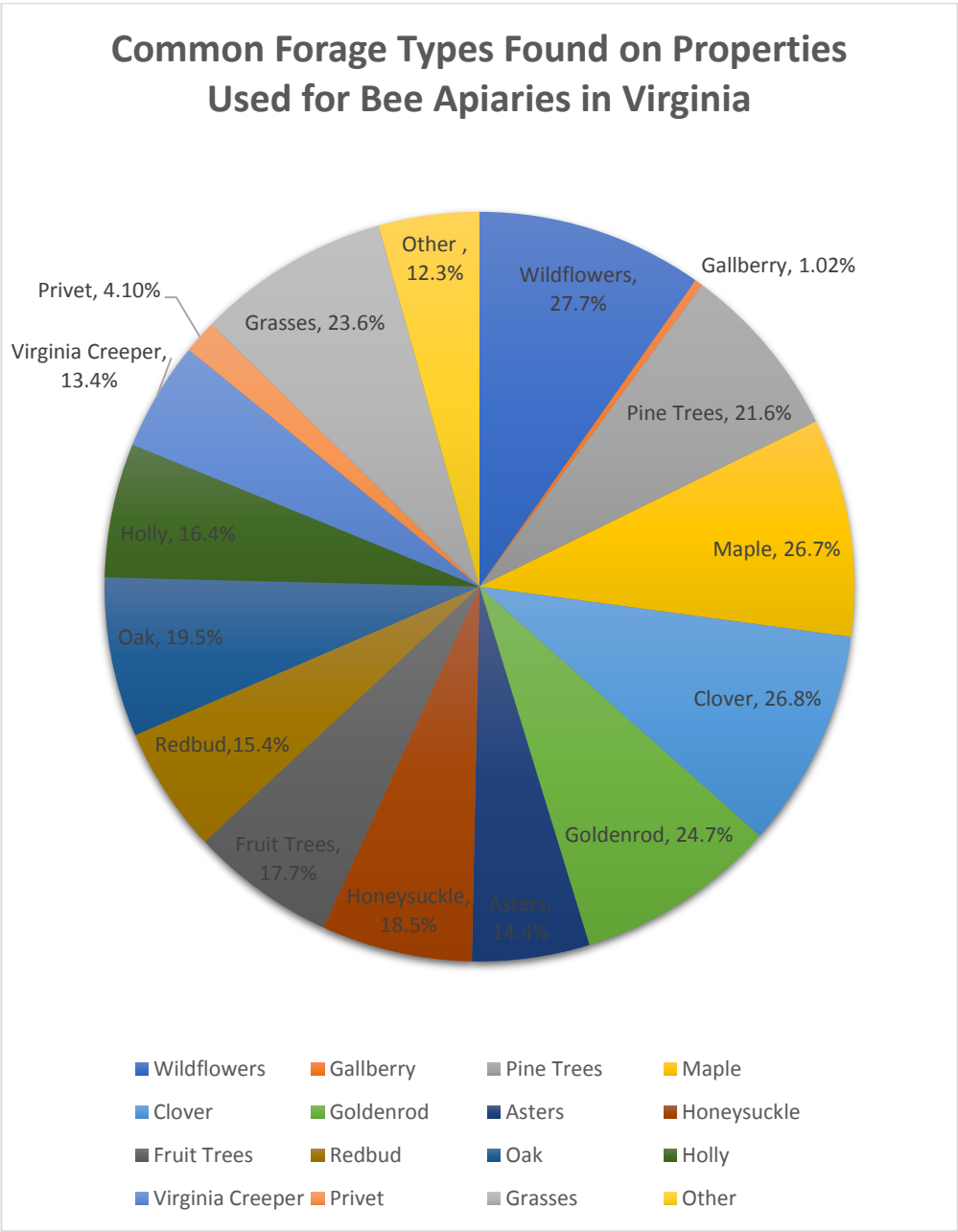
# NAPPC National Beekeeper Forage Survey

## Virginia (continued)



# NAPPC National Beekeeper Forage Survey

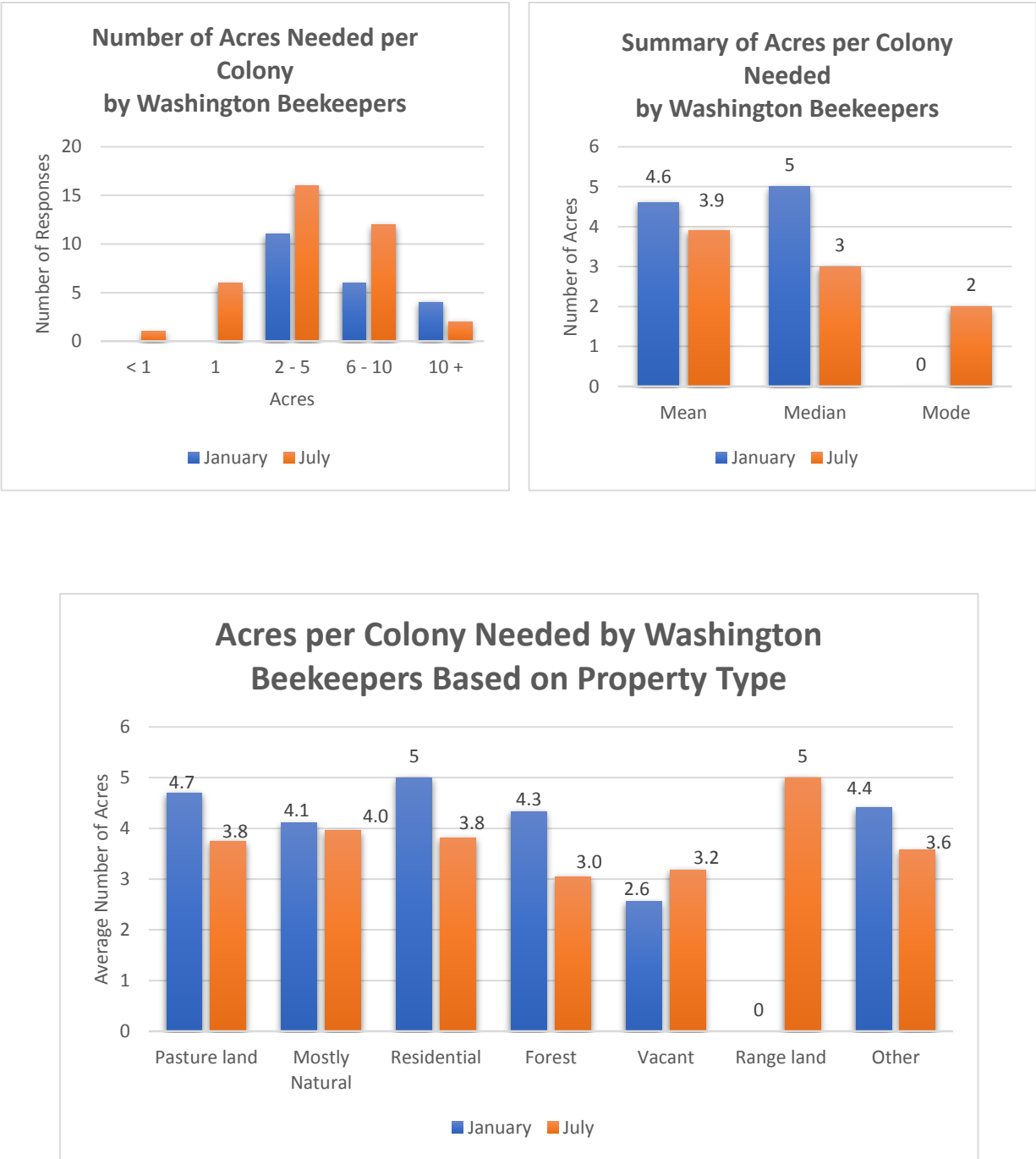
Virginia (continued)



# NAPPC National Beekeeper Forage Survey

## Washington

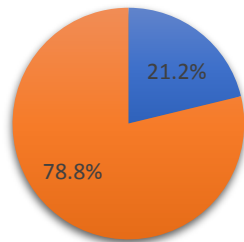
In Washington, a total of 46 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

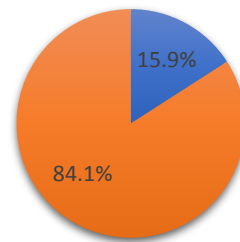
## Washington (continued)

**Percent of Washington Beekeepers that Require at Least 1 Acre per Colony in January**



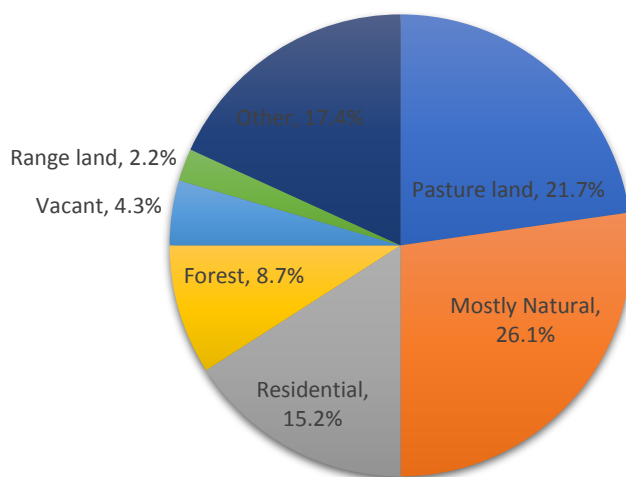
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers requiring more than 1 acre per hive

**Percent of Washington Beekeepers that Require at Least 1 Acre per Colony in July**



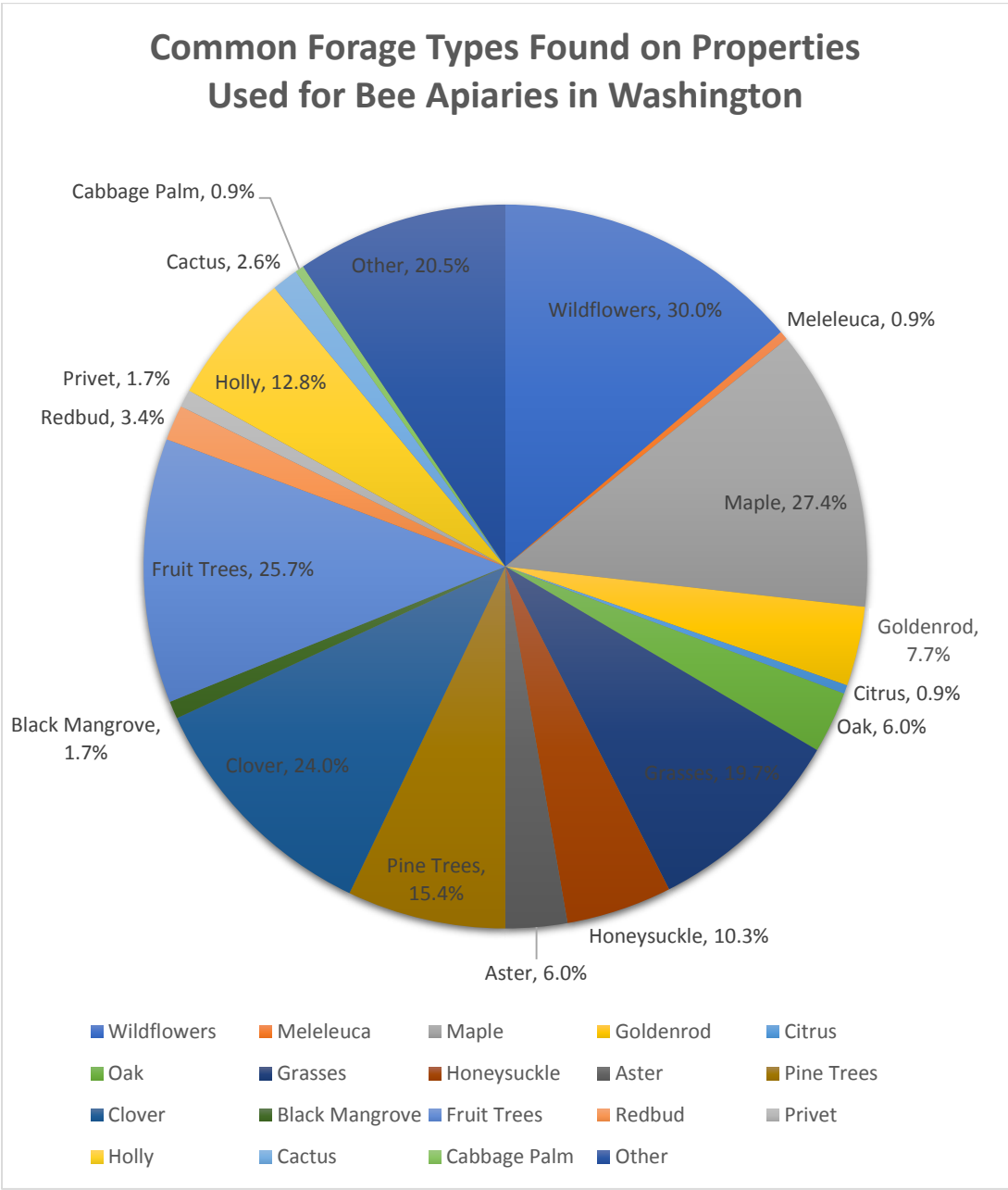
- Percent of Beekeepers that require less than 1 acre per hive
- Percent of Beekeepers requiring more than 1 acre per hive

**Common Property Types Used for Bee Apiaries in Washington**



# NAPPC National Beekeeper Forage Survey

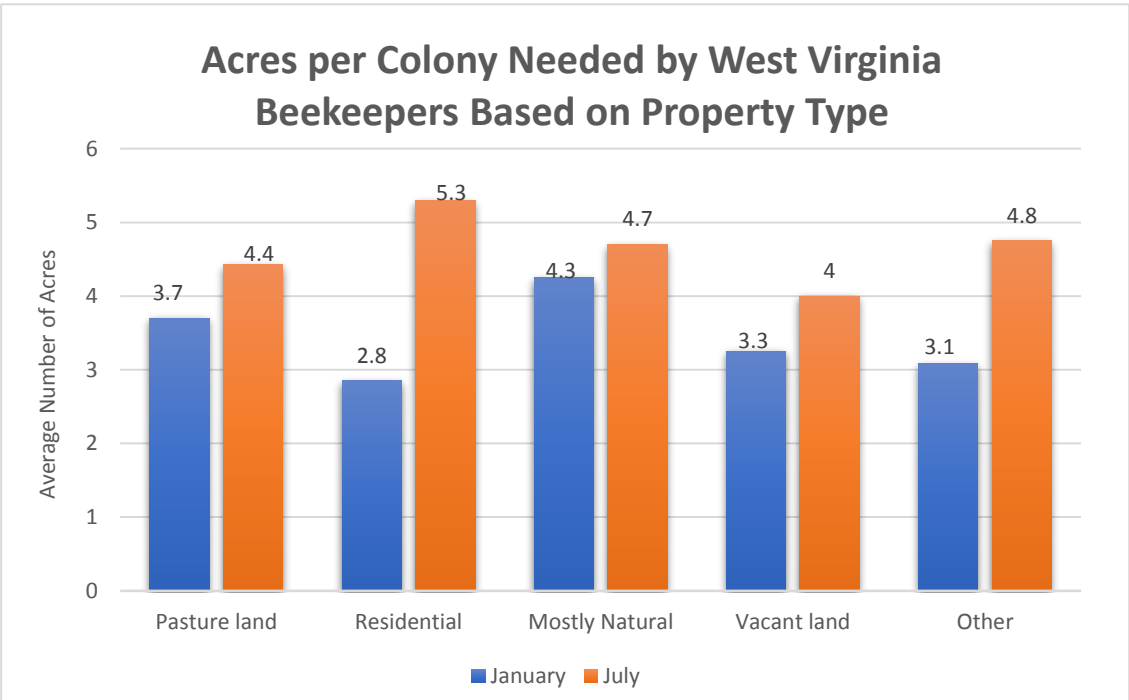
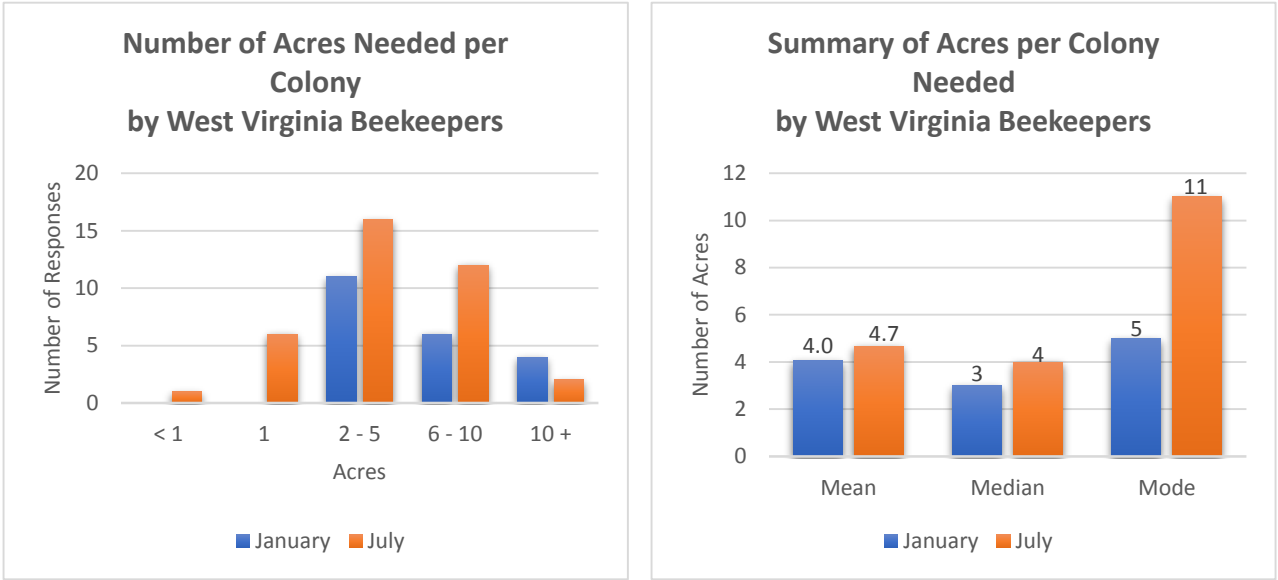
Washington (continued)



# NAPPC National Beekeeper Forage Survey

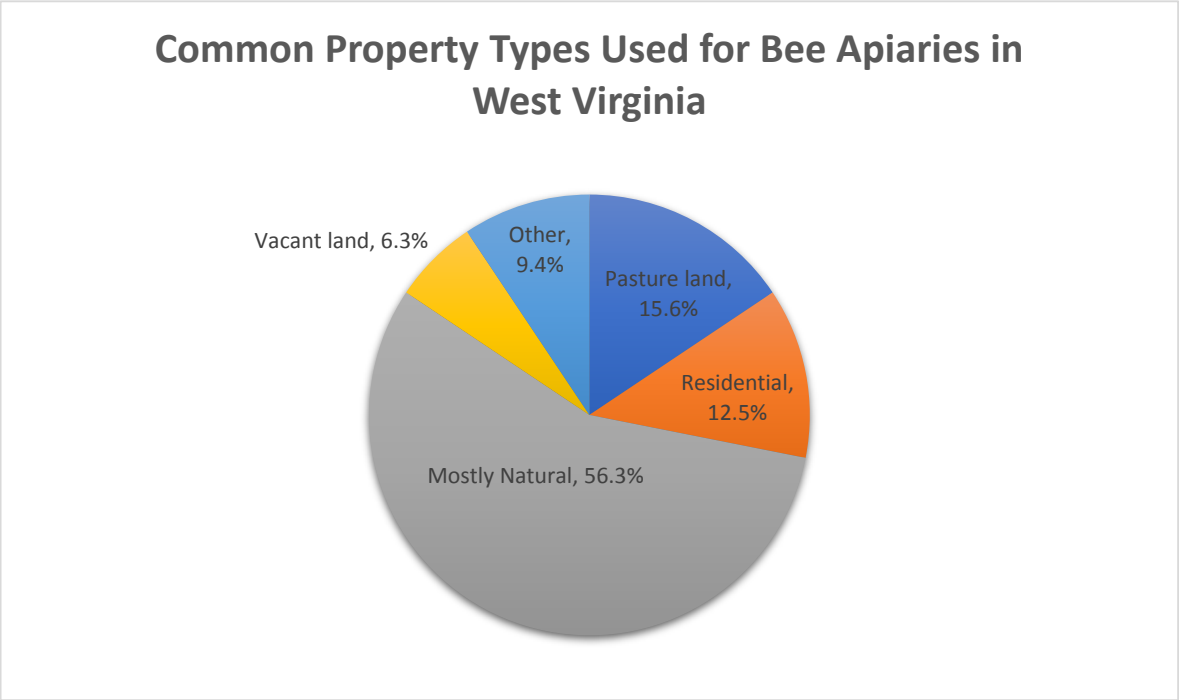
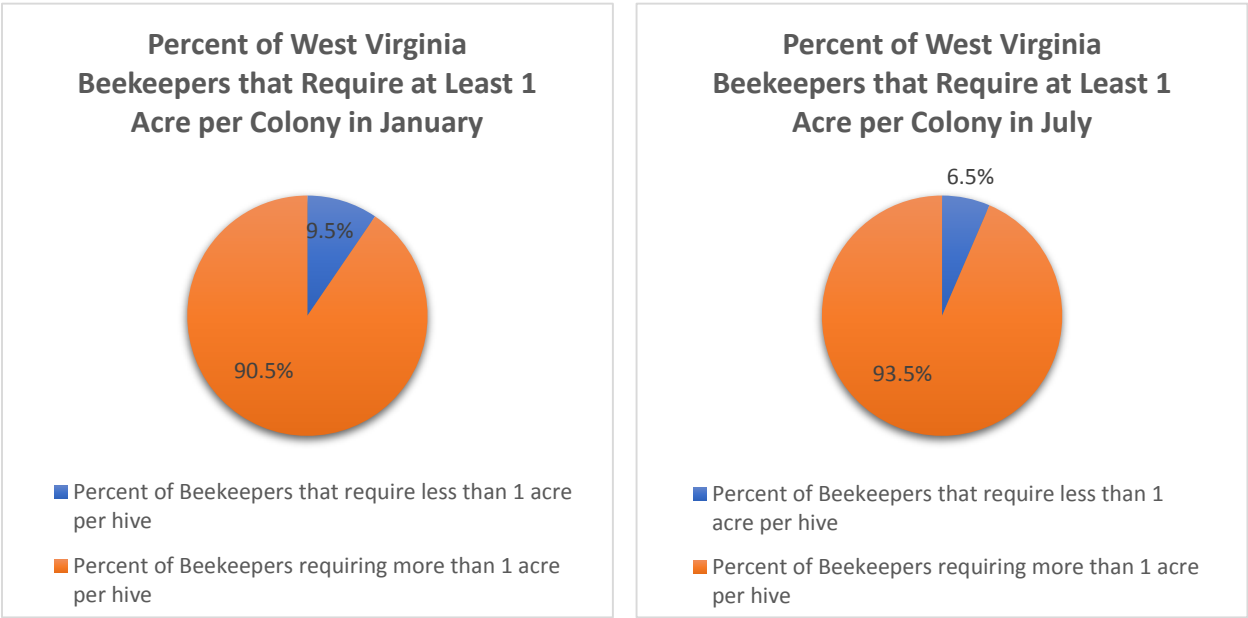
## West Virginia

In West Virginia, a total of 32 beekeepers responded to the survey.



# NAPPC National Beekeeper Forage Survey

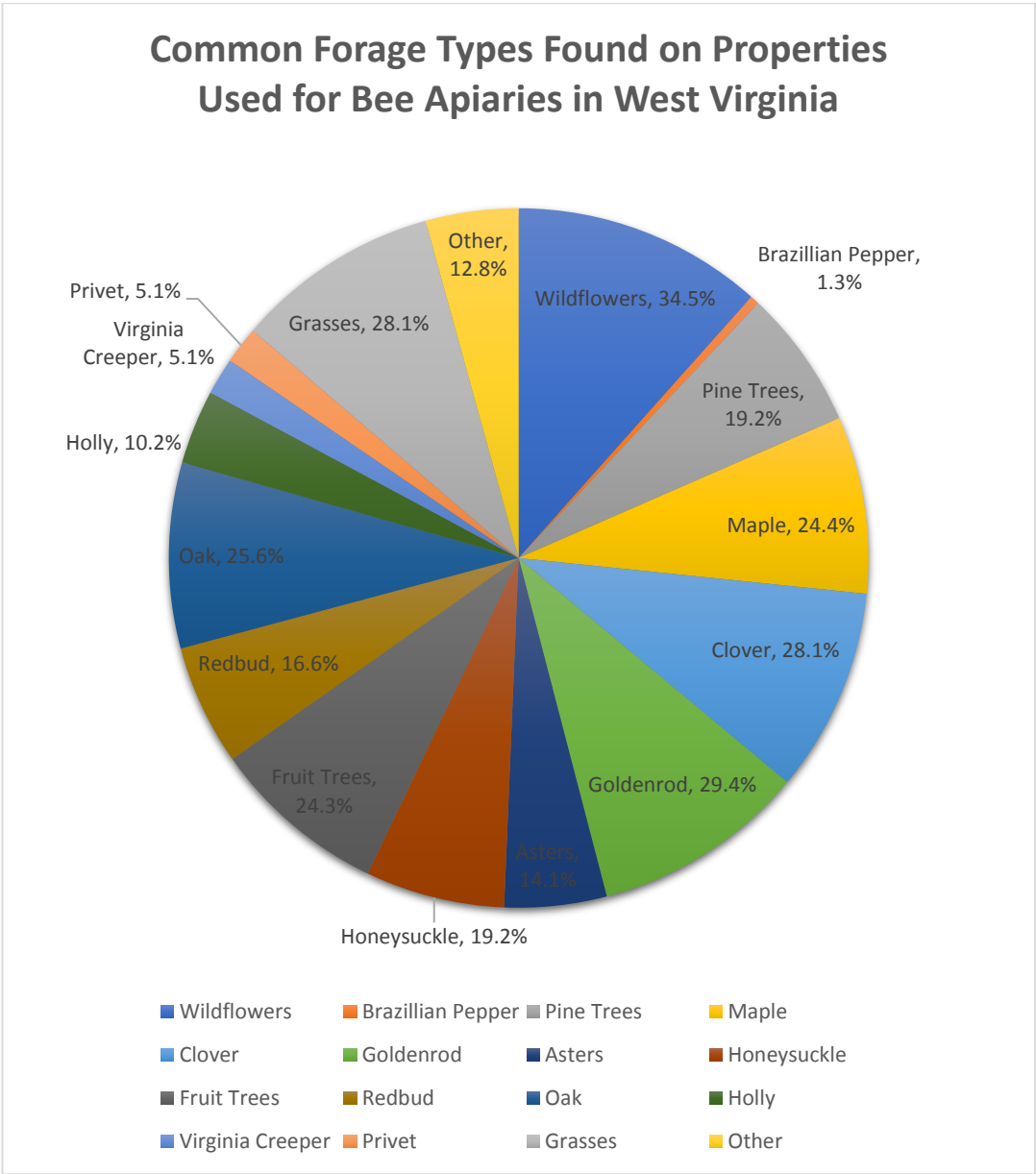
## West Virginia (continued)





# NAPPC National Beekeeper Forage Survey

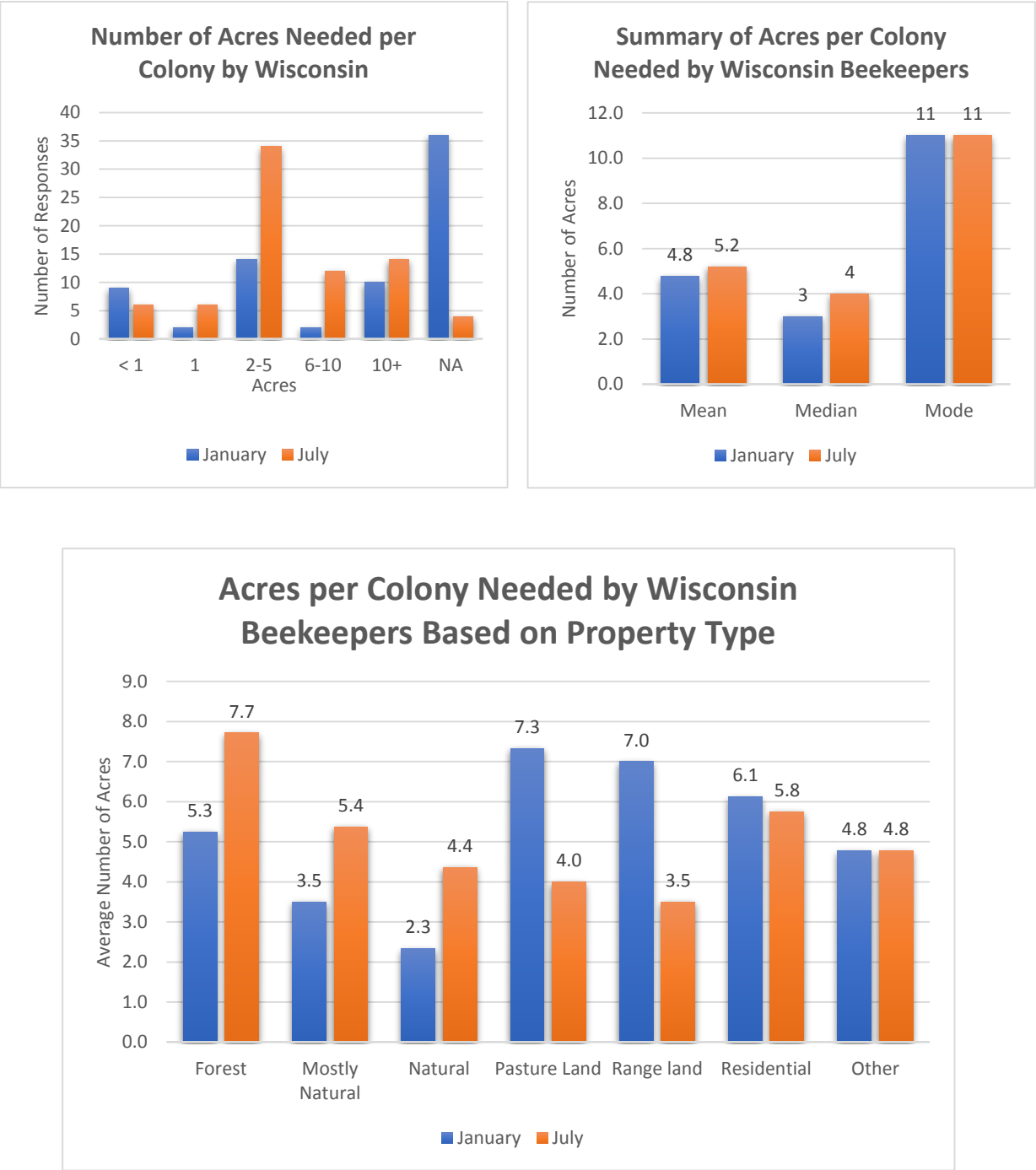
## West Virginia (continued)



# NAPPC National Beekeeper Forage Survey

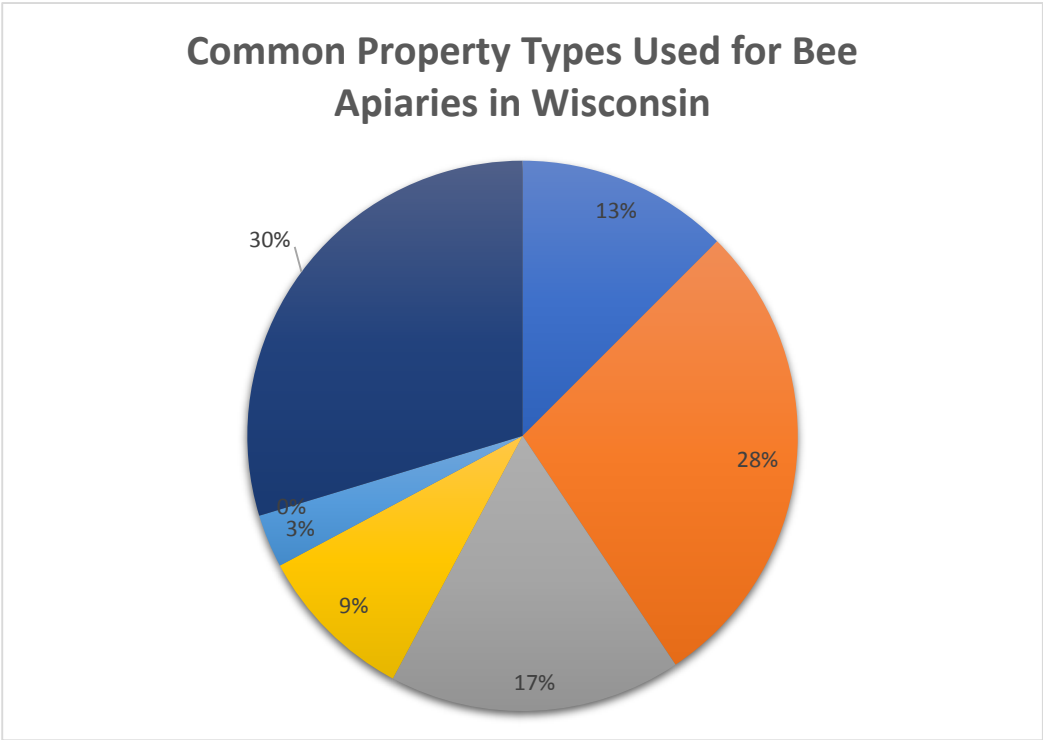
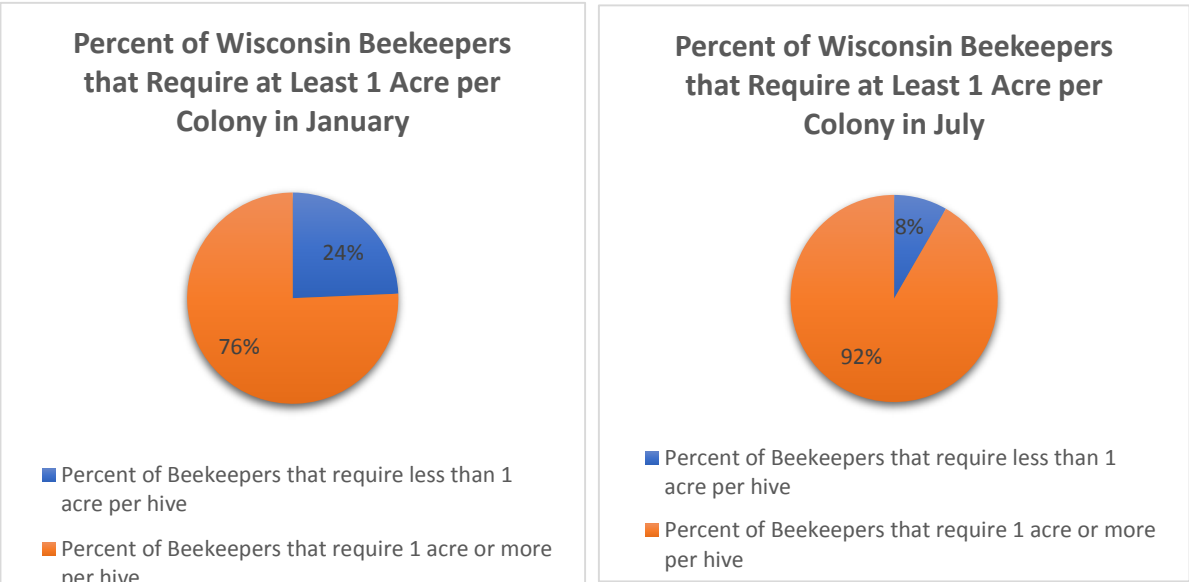
## Wisconsin

In Wisconsin, a total of 80 beekeepers responded to the survey.



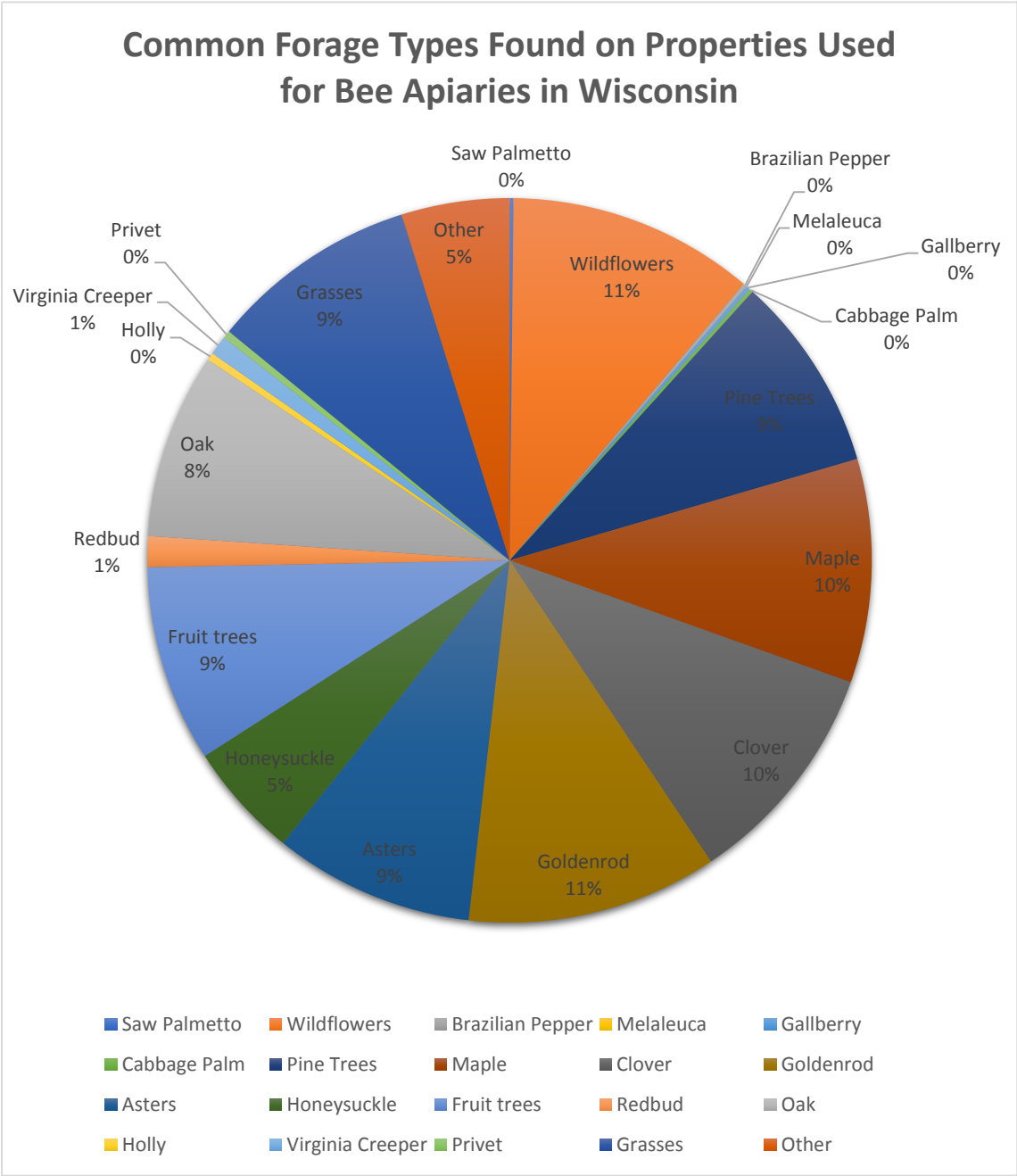
# NAPPC National Beekeeper Forage Survey

## Wisconsin (continued)



# NAPPC National Beekeeper Forage Survey

Wisconsin (continued)



# NAPPC National Beekeeper Forage Survey

## Wyoming

No Data was available for Wyoming