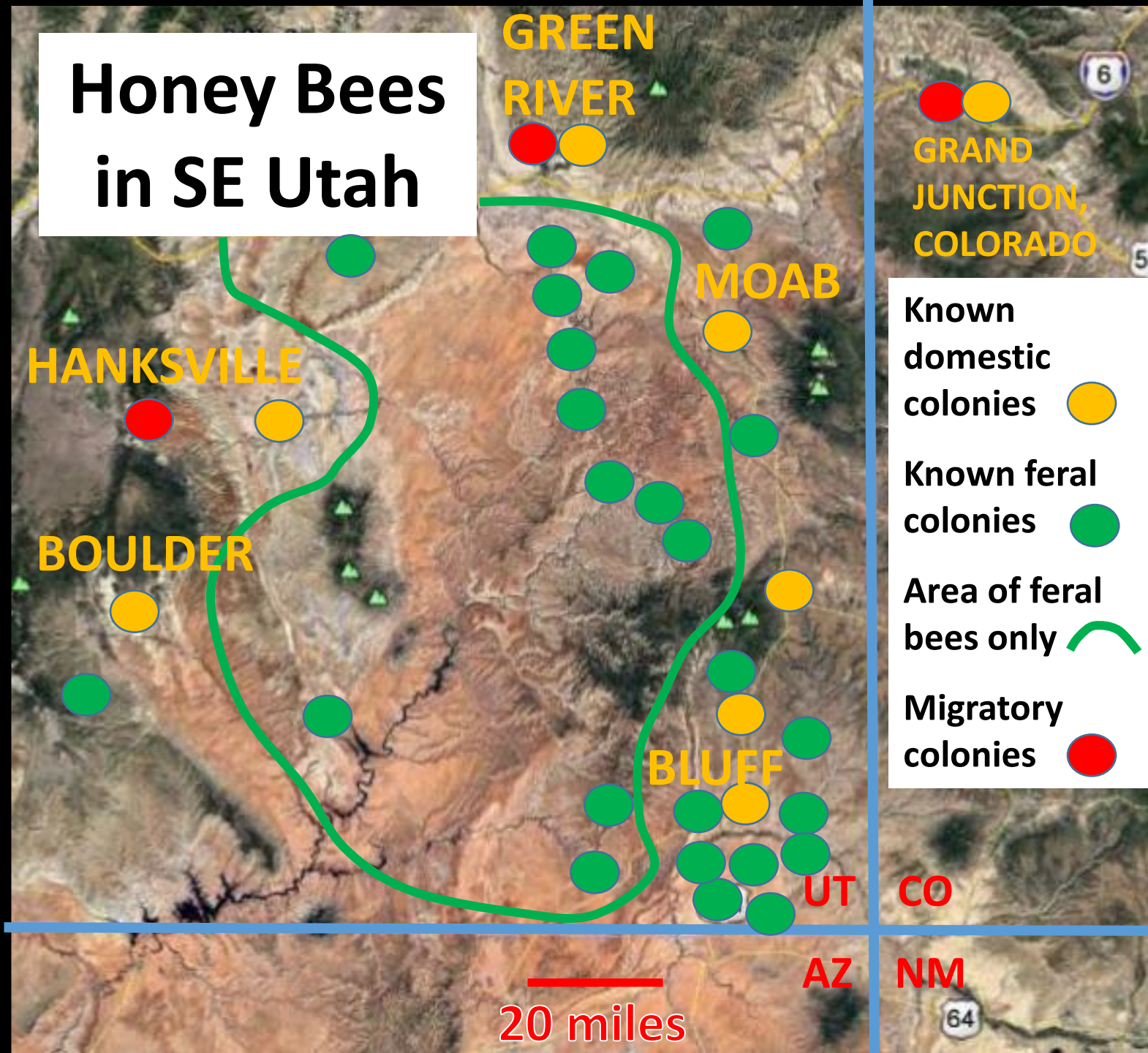


Honey Bees in SE Utah



GREEN RIVER

MOAB

HANKSVILLE

BOULDER

BLUFF

GRAND JUNCTION, COLORADO

Known domestic colonies

Known feral colonies

Area of feral bees only

Migratory colonies

20 miles

UT

CO

AZ

NM

Bucket swarm traps to sample for Africanized Bees in San Juan County



Transferring comb to frames

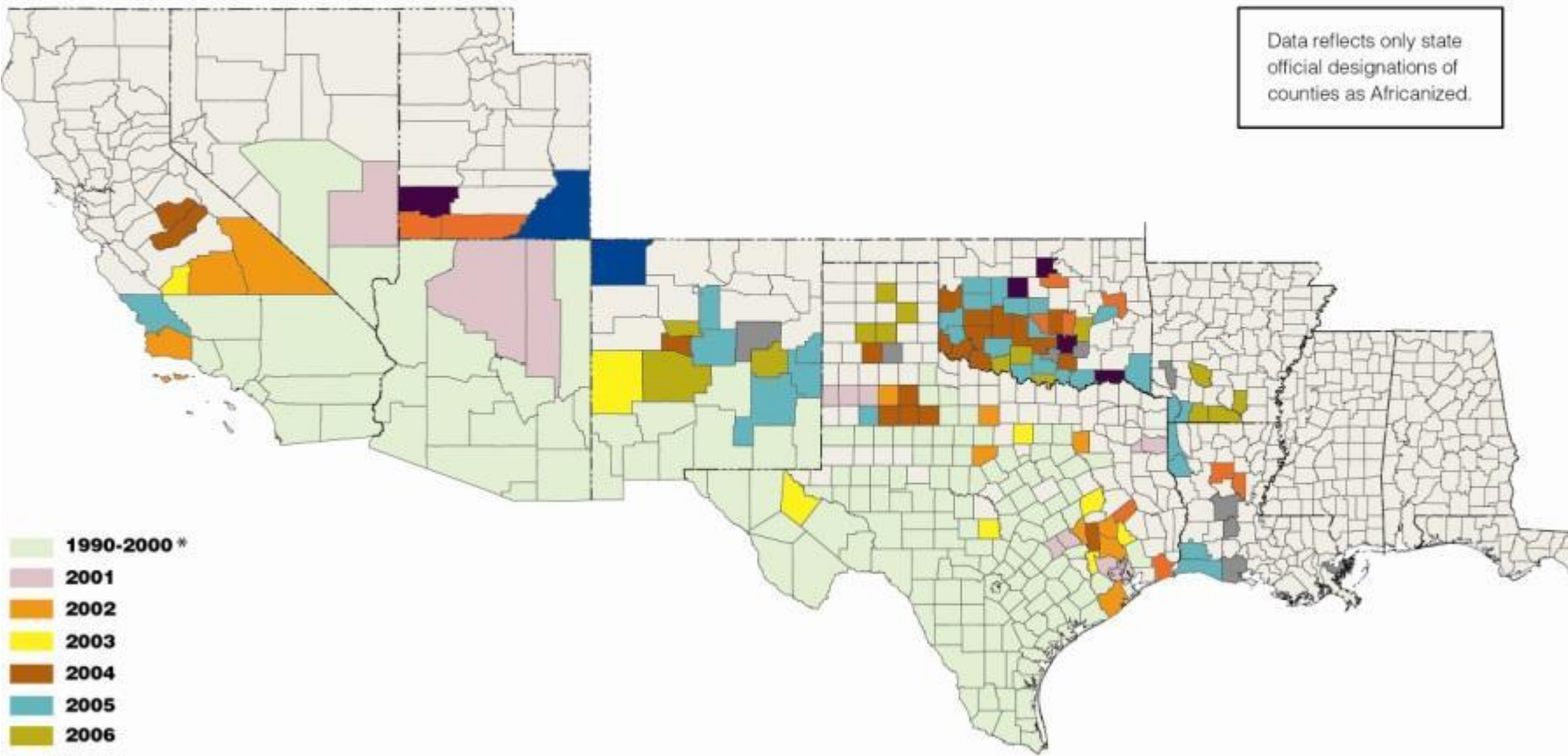


Spread of Africanized honey bees by year, by county

Updated March 2011

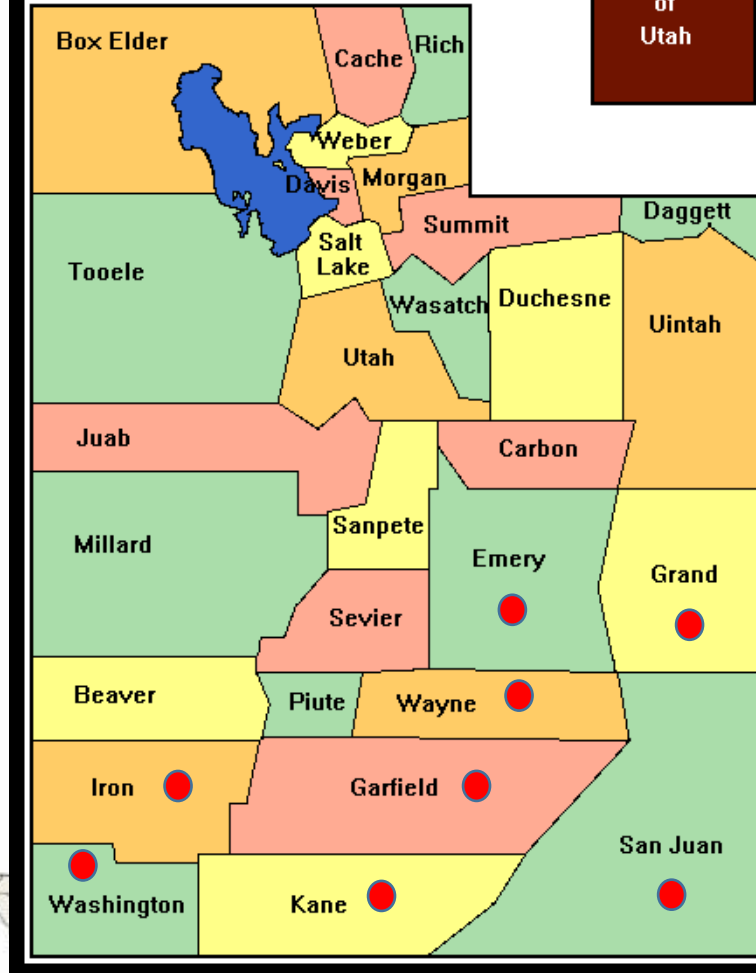
Agricultural Research Service, USDA

2011



Data reflects only state official designations of counties as Africanized.

As of 2016...



State of Utah



**Navajo Reservation
cut-out**

Another Navajo Reservation cut-out





Joan Geoff


San Juan River sampling

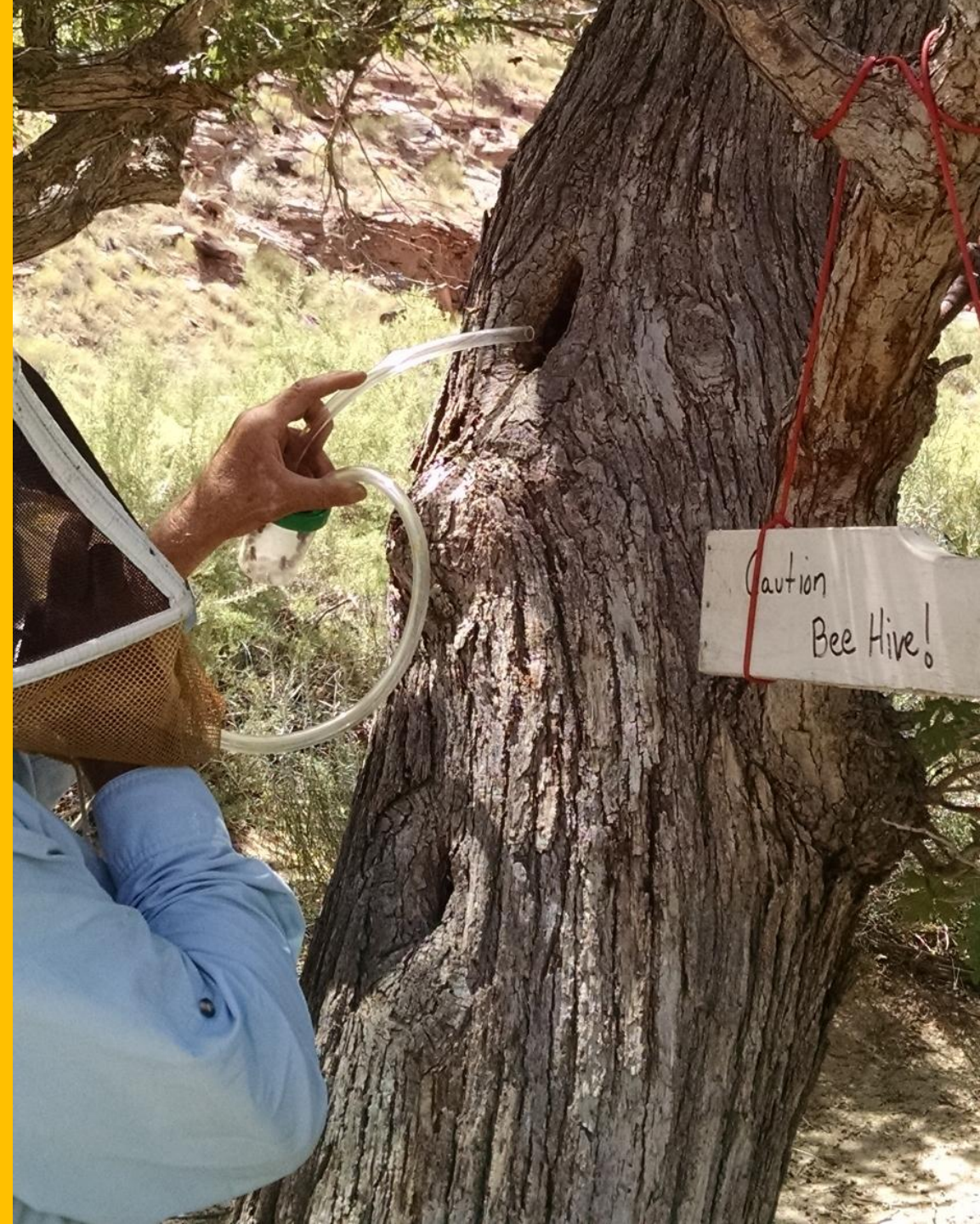


Spanish Bottom, Canyonlands National Park removal



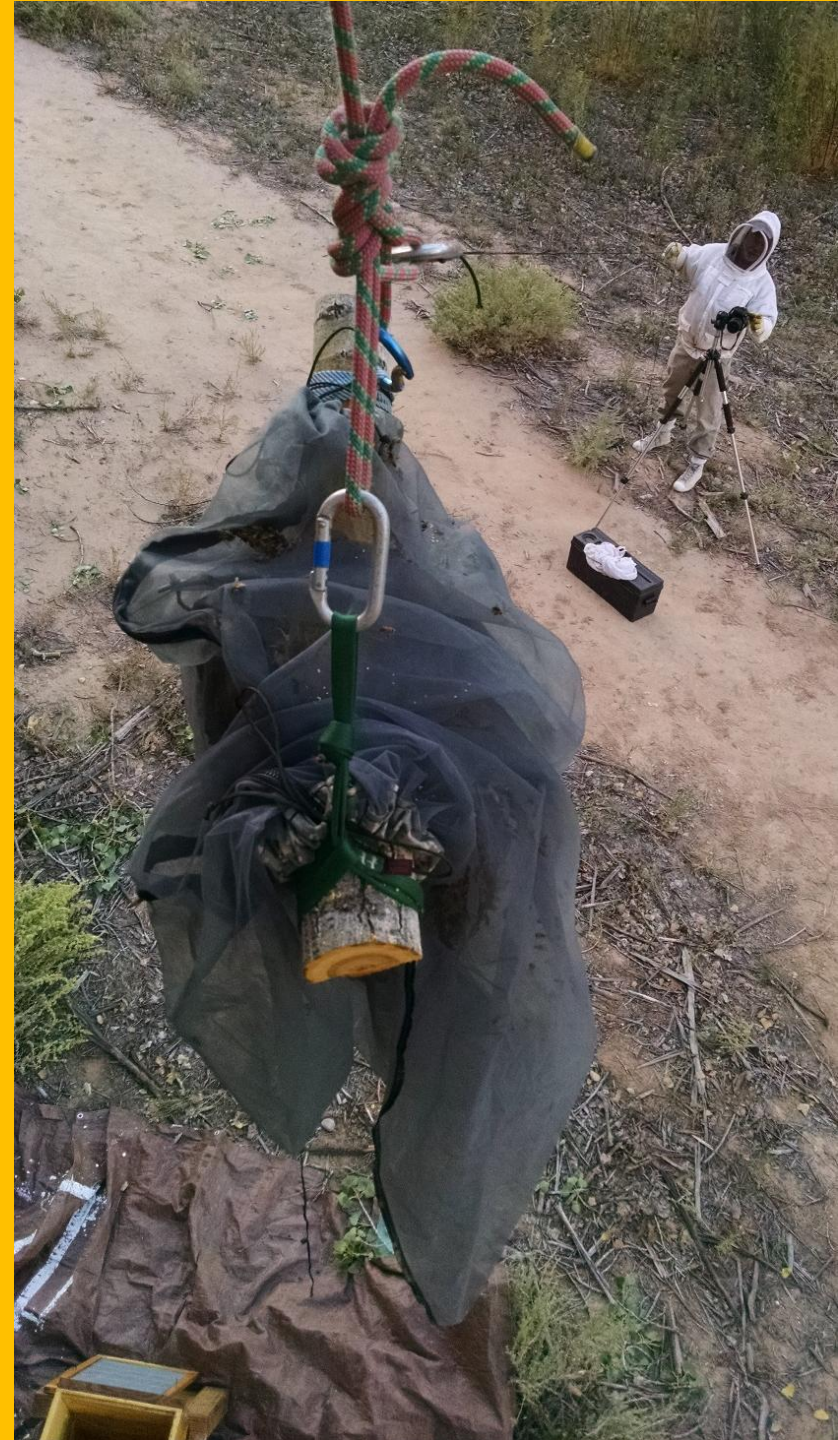


A park ranger ()
“shall perform...other duties,
as assigned.”



Green River sampling

Caution
Bee Hive!



**San Juan
River
removal**



**Colony hung in
hive box
and net removed**

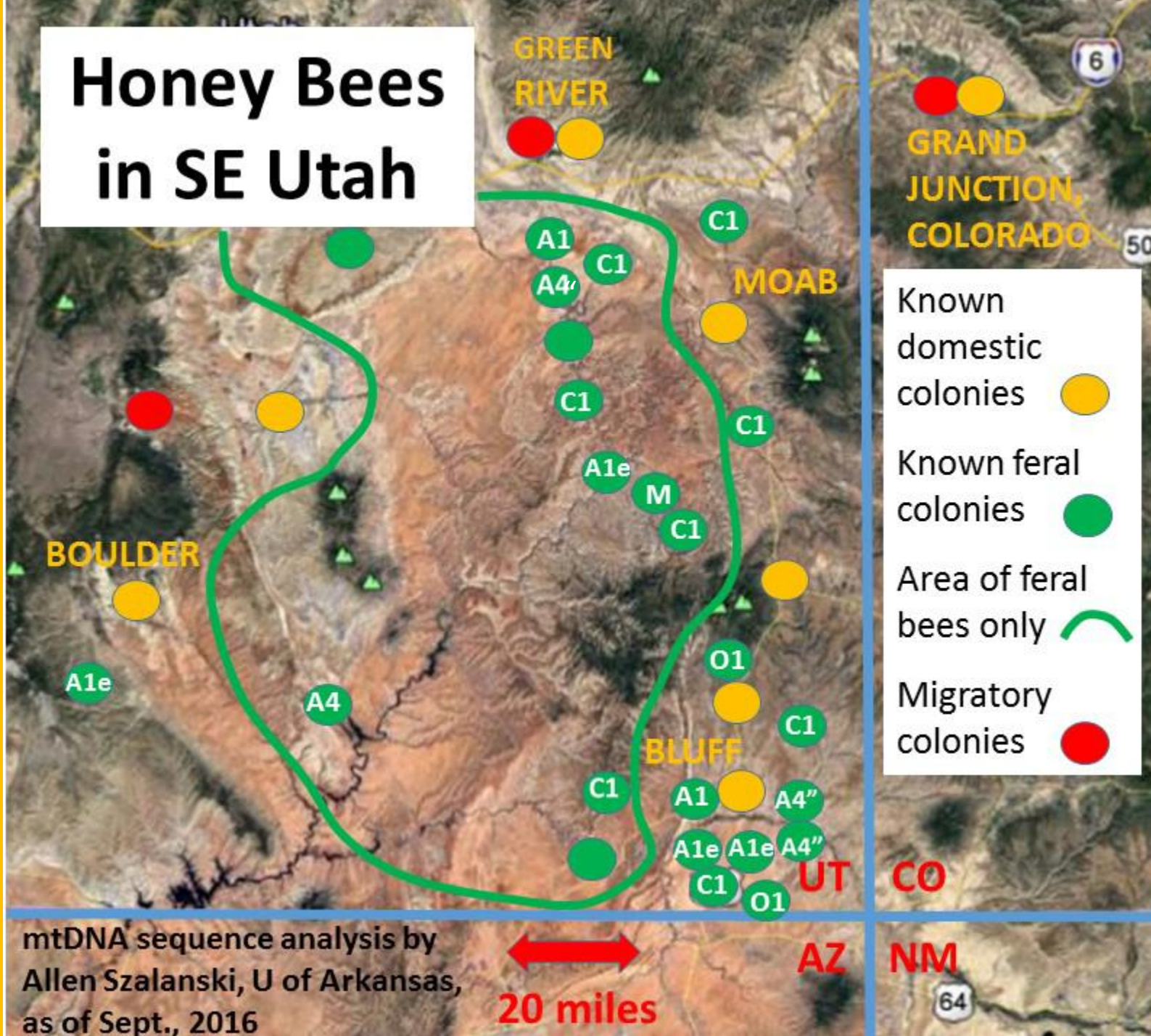


The next spring



Bluff slickrock sampling

Honey Bees in SE Utah



Apis mellifera mitotypes (maternal lineages)

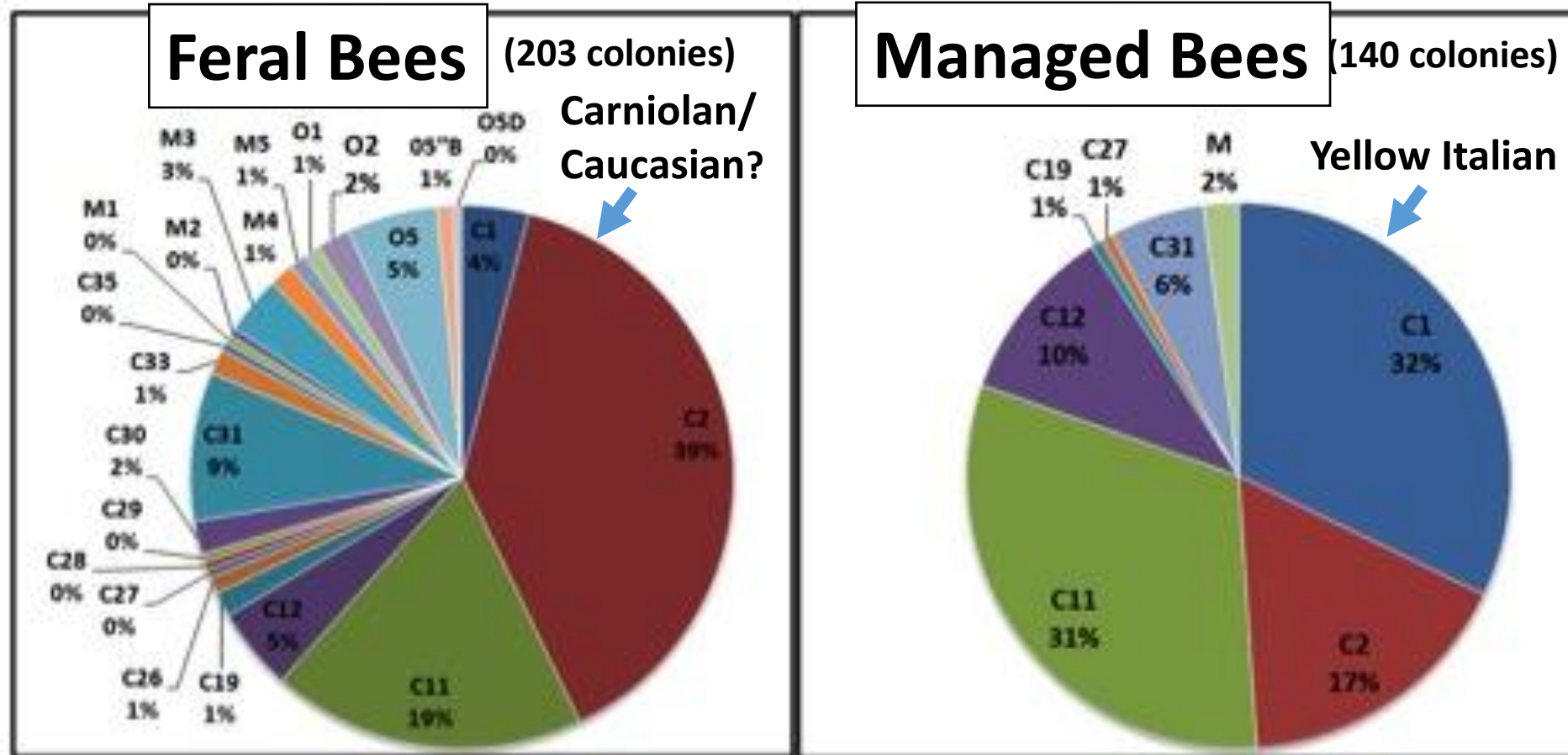
A1, A1e, A4, A4'' - Africa

C1 - Southeast Europe

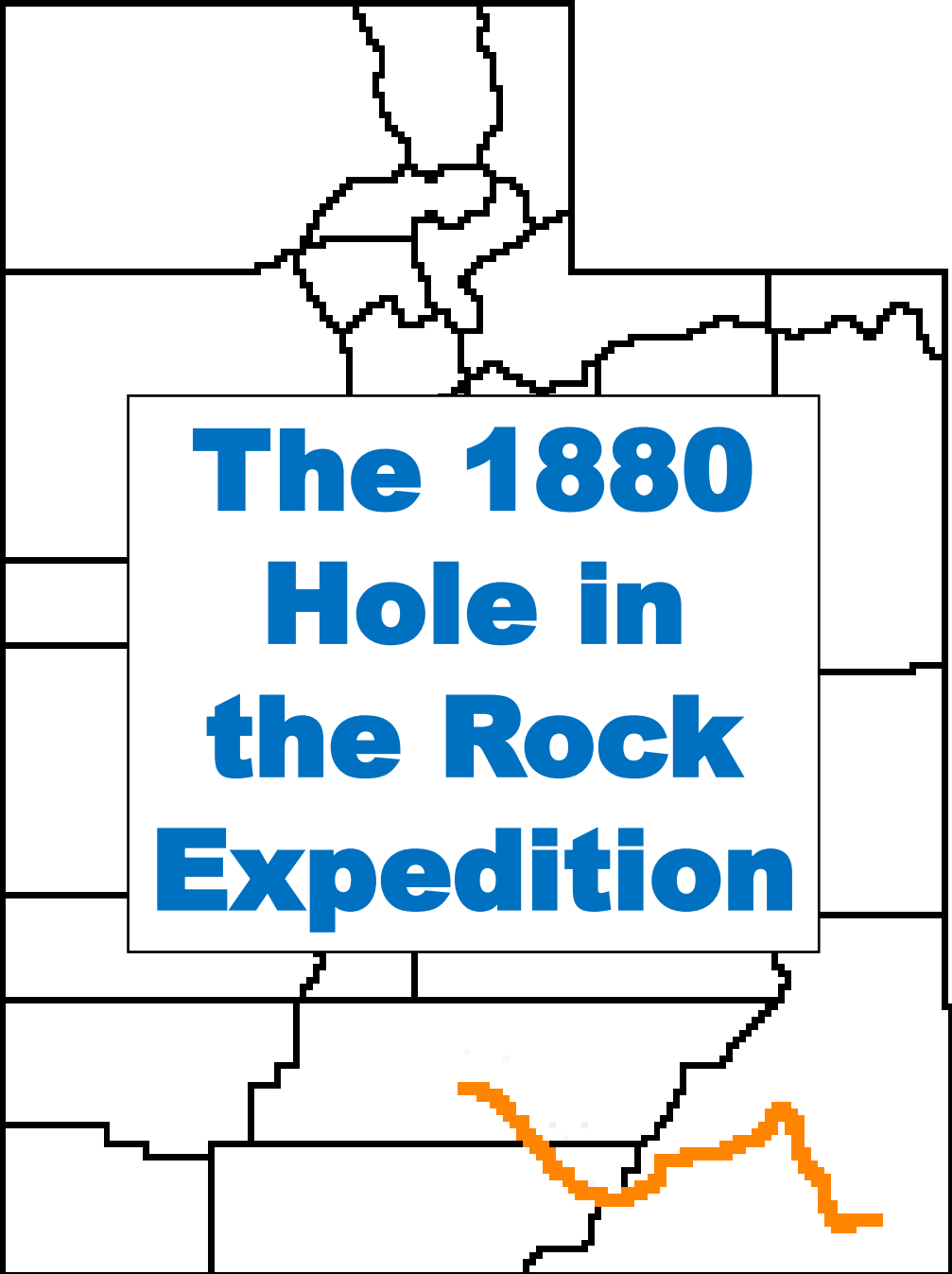
M - Western Europe

O1 - Near/Middle East

Genetic variation in honey bees from south central United States.



From Magnus, R and AL Szalanski (2008) Genetic variation in honey bees from south central United States. Poster at 2008 ESA In Randy Oliver, What's Happening To The Bees?
 – Part 5: Is There A Difference Between Domesticated And Feral Bees?
 First published in: American Bee Journal, June 2014



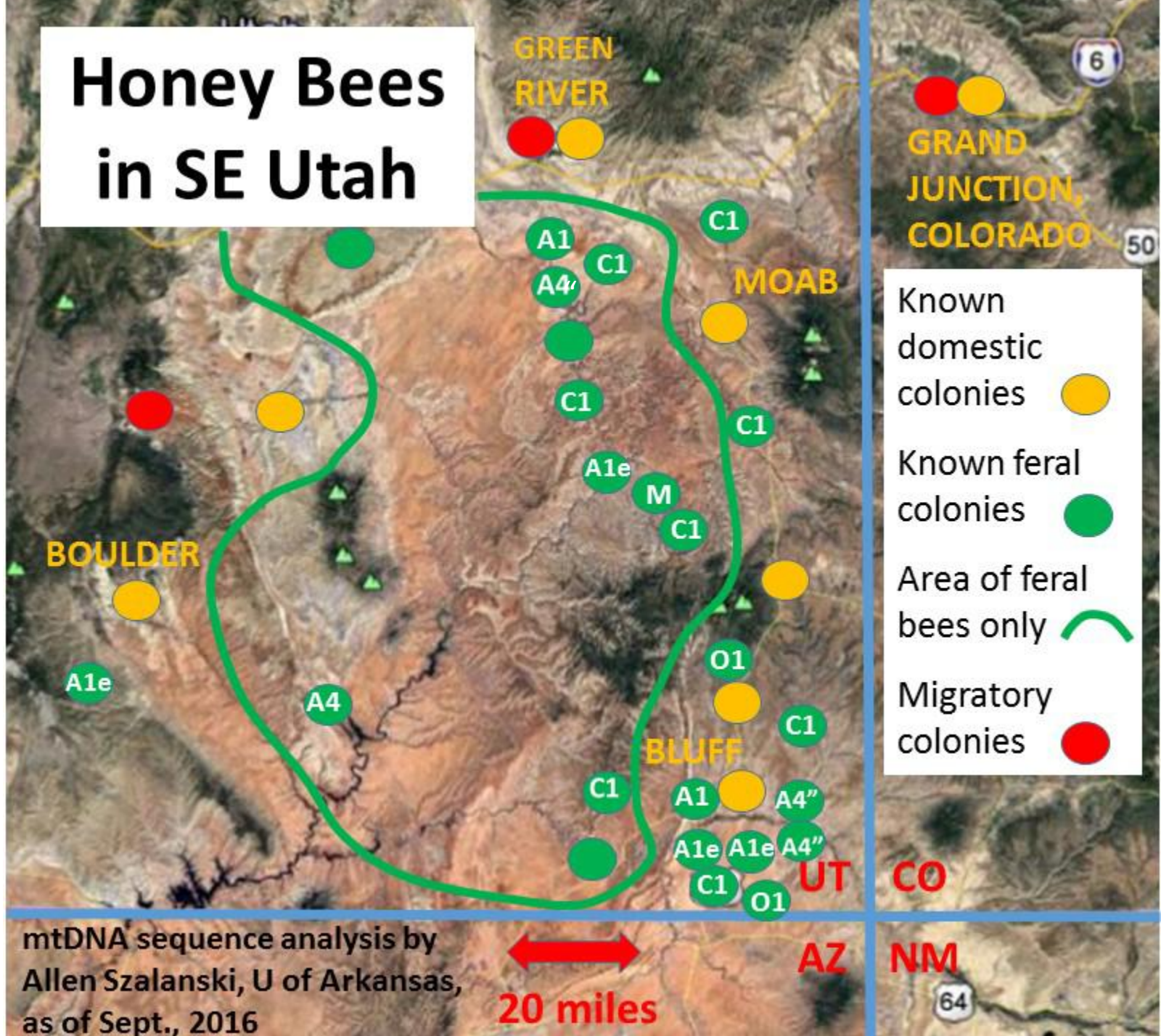
**The 1880
Hole in
the Rock
Expedition**

“Going up from the river the road was steep and the chain broke and the wagon turned over...

We had a hive of bees and had to wait till we could sack the bees before we could start packing the pieces of the wagon and the load up the hill.”

**- Henry John Holyoak,
nine years old**

Honey Bees in SE Utah



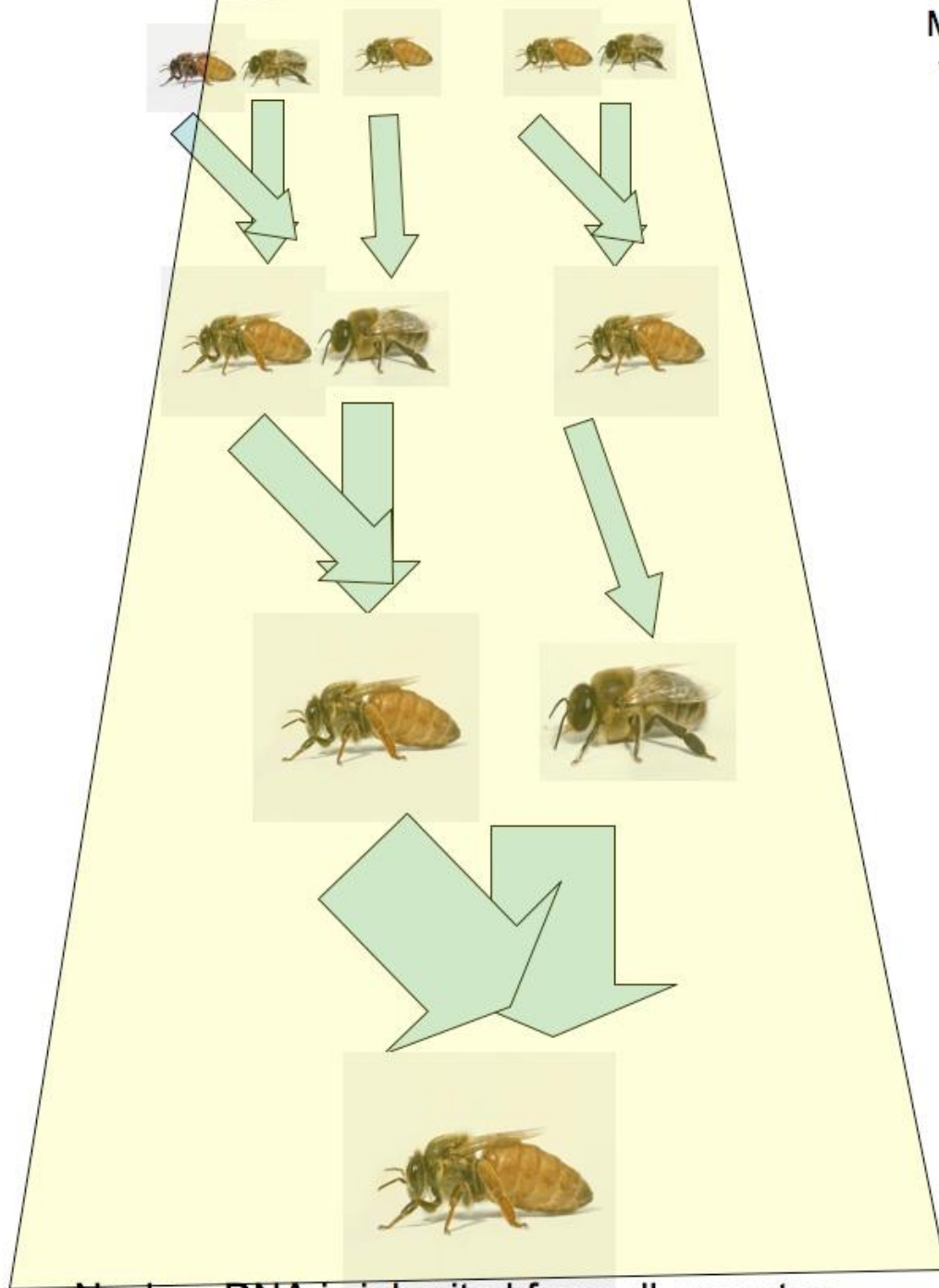
Apis mellifera mitotypes (maternal lineages)

A1, A1e, A4, A4'' - Africa

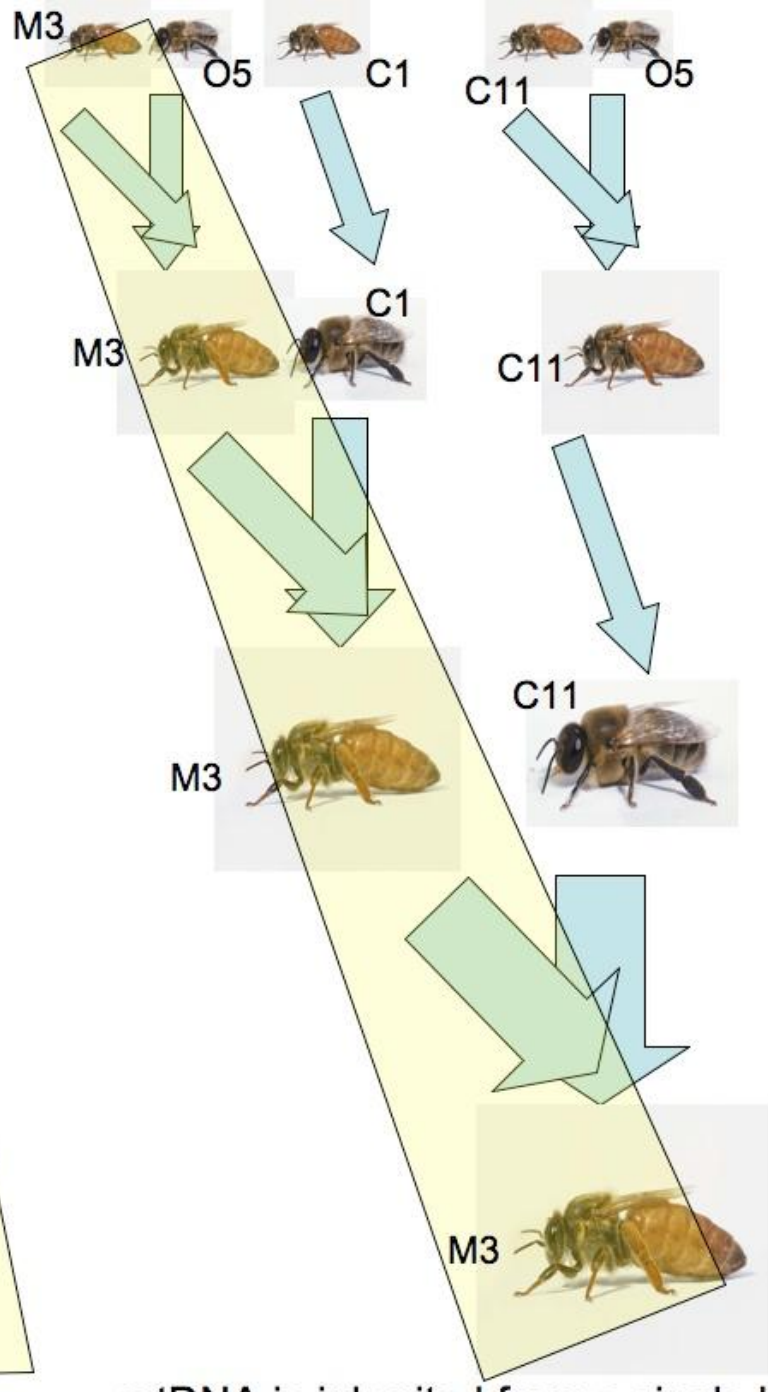
C1 - Southeast Europe

M - Western Europe

O1 - Near/Middle East



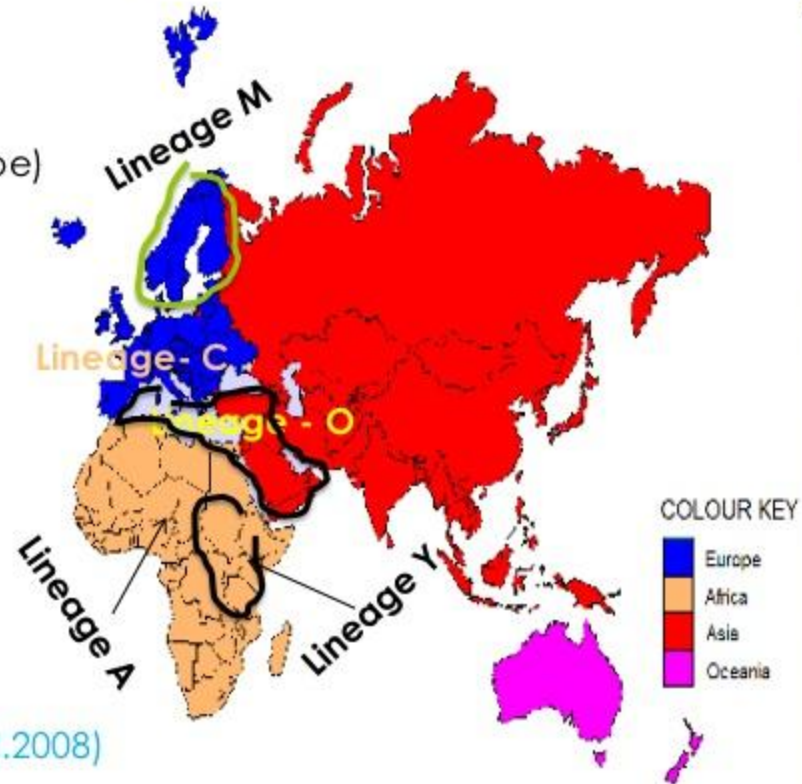
Nuclear DNA is inherited from all ancestors



mtDNA is inherited from a single lineage

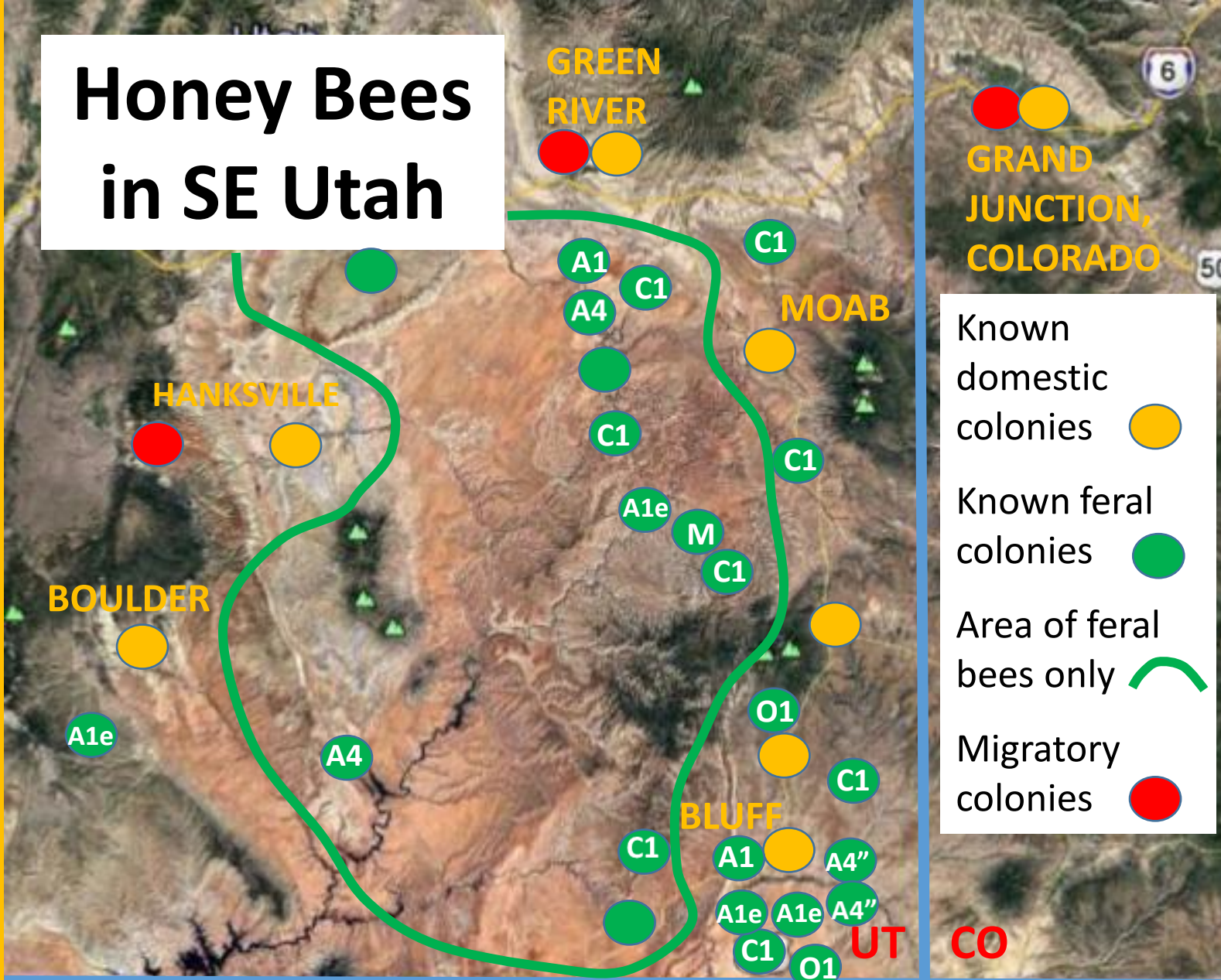
Distribution of *Apis mellifera* lineage

- A-Lineage** (Africa)
- M-Lineage** (Western Europe)
- C- Lineage**
(South Eastern Europe)
- O-Lineage**
Near East and Middle East
- Y-Lineage**(Ethopia)



(Ruttner, 1988; Ferreira et al.2008)
(Frank et al.2000)

Honey Bees in SE Utah



Known domestic colonies

Known feral colonies

Area of feral bees only

Migratory colonies

mtDNA sequence analysis by Allen Szalanski, U of Arkansas, as of Nov., 2016

20 miles