

# Characteristics of Races of Honeybees

There are several popular races of honey bees raised in North America for honey. There are others around the world but this paper only covers the ones that are here.

All races described below do well when managed well. They all do poorly when they are not managed well. The differences noted are slight. When a race is mentioned as prone to swarm, keep in mind that all bees swarm if crowded. A prone-to-swarm race is just a little more prone -- not a lot more prone to swarm. Differences between individual colonies are often greater than the differences between races mentioned here.



Honey bees, like all other living things, vary among themselves in traits such as temperament, disease resistance, and productivity. The environment has a large effect on differences among bee colonies (for example, plants in different areas yield different honey crops), but the genetic makeup of a colony can also impact the characteristics that define a particular group. Beekeepers have long known that different genetic stocks have distinctive characteristics, so they have utilized different strains to suit their particular purpose, whether it be pollination, a honey crop, or bee production

Although North America has about 4,000 native species of bees, honey bees are not native to the New World. Honey bees were brought to America in the 17th century by the early European settlers. These bees were most likely of the subspecies *apis mellifera mellifera*, otherwise known as the German or “black” bee.

## **What is a bee stock?**

The term “stock” is defined as a loose combination of traits that characterize a particular group of bees. Such groups can be divided by species, race, region, population, or breeding line in a commercial operation. Many of the current stocks in the United States can be grouped at one or more of these levels, so the term will be used interchangeably, depending on the particular strain of bees in question.

Wide variation exists within stocks as well as among them. Any generalities about a particular stock should be treated with caution, since there are always exceptions to the rule. Nonetheless, the long and vast experience of beekeepers allows some generalizations to be made in order to better understand the different races of bees available. The following is a brief overview of some of the more common commercially available honey bee stocks in the U.S.

## Italian Bees

- *Apis mellifera ligustica*
- Brought to the US in 1859
- Usually have bands on their abdomen of brown to yellow color
- Most popular bee in North America
- Gentle and non-aggressive
- Very good honey producers
- Uses less propolis than some of the darker bees
- Prone to rob and drift
- Robbing behavior may pose problems because it may cause the rapid spread of transmittable diseases
- Colonies are usually large
- Queens lay all through the summer, so a large amount of stores is used for brood rearing
- Extended periods of brood rearing
- Can build colony populations in the spring and maintain them for the entire summer
- May consume surplus honey in the hive if supers are not removed immediately after the honey flow stops
- Usually winters well.
- Swarming instinct is not especially strong
- Less prone to disease than their German counterparts
- Keeps a clean hive
- Quick to get rid of the wax moth
- The Minnesota Hygienic stock of the Italian honey bee has been selected for its exceptional housecleaning ability, significantly reducing the negative effects of most brood diseases.



## Cordova bee

- A subset of the Italians
- Has a very light yellow color, which is more attractive to many beekeepers.
- They have no black on them and look very yellow at first sight. Looking closely you see that where the Italians normally have black legs and head, they have a purplish brown legs and head
- Slightly more gentle, slightly more likely to rob



## Caucasian Bees

- *Apis mellifera caucasica*
- Native to the foothills of the Ural mountains near the Caspian Sea in eastern Europe
- Once popular in the US, but it has declined in regard over the last few decades
- Very gentle bees
- Silver gray to dark brown color
- Does not swarm excessively
- Brood buildup is later in the spring
- A good honey producer, not exceptional
- Caucasians produce and use a good deal of propolis
- Very long tongue, which enables the bees to forage for nectar from flowers that other bee stocks may not have access to
- Extremely docile
- Slow spring buildup keeps them from generating very large honey crops
- Tends to use an excessive amount of propolis -- the sticky resin substance sometimes called “bee glue” that is used to seal cracks and joints of bee structures
- Less prone to robbing



## Carniolan Bees

- *Apis mellifera carnica*
- Darker brown to black
- A very gentle race of bees
- Probably the best wintering bees
- Little use of propolis
- Builds up very rapidly in the spring to take advantage of blooms that occur early in the spring
- Summer brood rearing depends on pollen and nectar flow
- Usually not inclined to rob
- These bees tend to swarm more -- probably due to rapid spring build up
- Not as productive as Italians
- From middle Europe
- Has been a favored bee stock in the US
- Extremely docile and can be worked with little smoke and protective clothing
- Much less prone to robbing other colonies of honey, lowering disease transmission among colonies
- Very good builders of wax combs
- They fly in slightly cooler weather
- In theory are better in northern climates
- Frugal for the winter



- Winters in small clusters
- Shuts down brood rearing when there are dearths

### **Buckfast Bees**

- Developed by brother Adam at Buckfast Abbey, Devon, England
- Rapid in spring population buildup, preventing them from taking full advantage of early nectar flows
- Very gentle bees -- moderately defensive, However, if left unmanaged for one or two generations, they can be among the most fiercely defensive bees of any stock
- Low tendency to swarm
- Low consumption of winter stores
- Well adapted to areas with damp cold winters
- Excellent honey producers
- Inclined to rob
- Similar to the Italians as far as robbing
- Resistant to the tracheal mites
- More frugal than the Italians, but not as much as the Carniolans
- In the 1920s, honey bee colonies in the British Isles were devastated by acarine disease, which now is suspected to have been the endoparasitic tracheal mite *Acarapis woodi*. Brother Adams, a monk at Buckfast Abby in Devon, England, was charged with creating a bee stock that could withstand this deadly disease. He traveled the world interviewing beekeepers and learning about different bee strains, and he created a stock of bees, largely from the Italian race, that could thrive in the cold wet conditions of the British Isles, yet produce good honey crops and exhibit good housecleaning and grooming behavior to reduce the prevalence of disease.



### **German or English native bees**

- *Apis mellifera mellifera*
- Very dark in color
- Native to England or Germany
- Has some of the characteristics of the other dark bees
- Do well in damp cold climates
- Excitable on the combs
- Prone to swarm
- Well adapted to Northern climates.
- Tends to be very defensive, making bee management more difficult
- Hardy, able to survive long, cold winters in northern climates
- Susceptible to many brood diseases (such as American and European foulbrood)



- This stock lost favor with beekeepers well over a century ago
- Although the feral bee population in the US was once dominated by this strain, newly introduced diseases have nearly wiped out most wild honey bee colonies, making the German bee a rare stock at this time

### Russian bee

- *Apis mellifera caucasica*
- One of the newer bee stocks in the US
- Imported from far-eastern Russia by the US Department of Agriculture's Honey Bee Breeding, Genetics, and Physiology Laboratory in Baton Rouge, Louisiana. The researchers' logic was that these bees from the Primorski region on the Sea of Japan, have coexisted for the last 150 years with the devastating ectoparasite *Varroa destructor*, a mite that is responsible for severe colony losses around the globe, and they might thrive in the US. The USDA tested whether this stock had evolved resistance to varroa and found that it had. Numerous studies have shown that bees of this strain have fewer than half the number of mites that are found in standard commercial stocks. The quarantine phase of this project has been complete since 2000, and bees of this strain are available commercially.
- Tends to rear brood only during times of nectar and pollen flows
- Brood rearing and colony populations tend to fluctuate with the environment
- Good housecleaning behavior, resulting in resistance not only to varroa but also to the tracheal mite
- Tends to have queen cells present in their colonies almost all the time
- Performs better when not in the presence of other bee strains
- Cross-contamination from susceptible stocks can lessen the varroa
- A bit defensive, but in odd ways. They tend to head butt a lot while not stinging any more than other stocks. They are watchful guards, but not "runny" (tending to run around on the comb where you can't find the queen or work with them well).
- Swarminess and productivity are a bit more unpredictable. Traits are not well fixed
- Frugality is similar to the Carniolans



### Midnight bee

- A hybrid developed by crossing the Caucasian and Carniolan stocks, hoping to maintain the extreme gentleness of both strains while removing the excessive propolis of the Caucasians and minimizing the swarming propensity of the Carniolans.
- These are to the Caucasians what the Starline is to the Italians
- Has a hybrid vigor that disappears in the next generation of queen

## Starline

- A hybrid developed from numerous strains of the Italian stock by Gladstone Cale of the Dadant Bee Company
- It was once favored by commercial beekeepers because of its tremendous honey yields, particularly in clover, but the popularity of this stock has declined in recent decades
- Very prolific and productive, but subsequent queens (supersedures, emergency and swarms) are disappointing
- If you buy Starlines every year to requeen, they will give you very good service

## Africanized Honey Bees (AHB)

- *Apis mellifera scutellata* or *Apis mellifera adansonii*
- AHB are a mixture of African (*scutellata*) and Italian bees
- They were created in an attempt to increase production of bees
- The USDA bred these at Baton Rouge from July 1942 until 1961. They shipped queens to the continental US at about 1500 queens a year from July 1949 until July of 1961. They were raised in testing labs in Laramie WY, Ontario Canada and Madison, WI. The Brazilians also were experimenting with them and the migration of those bees has been followed in the news for some time.
- Extremely productive bees
- Extremely defensive
- If you have a hive hot enough that you think they are AHB you need to requeen them. Having angry bees where they might hurt people is irresponsible. You should try to requeen them so no one (including you) gets hurt.



## Conclusion

While a tremendous amount of variation remains within and among the different bee stocks, some generalities still can be made. Bee differences can be used to advantage by beekeepers, depending on what traits interest them, so using different stocks can be a powerful tool at the beekeeper's disposal. There is no "best" strain of bee, as the traits favored by one beekeeper may differ significantly from another's choice. Thus, it is best for each beekeeper to experience the characteristics of the different bee strains first hand and then form an opinion about which stock best fits his or her situation.

<b>Comparison of popular races of bees and their traits</b>						
	Italian	German	Carniolan	Buckfast	Caucasian	Russian
Color	Light	Dark	Black	Medium	Dark	Gray
Disease/pest resistance						
Varroa	-	-	-	-	-	+
Tracheal	-	-	-	+	0	+
AFB *	0	-	+	0	0	0
EFB **	0	0	0	0	0	0
Other	0	0	+	+	-	0
Gentleness	Moderate	Low	High	Low-moderate	High	Low-moderate
Spring Buildup	Good	Low	Very good	Low	Very low	Okay
Overwintering ability	Good	Very good	Good	Good	Okay	Very good
Excess swarming	Okay	Okay	High	Low	Low	Okay
Honey processing	Very good	Okay	Good	Good	Low	Okay
Propolis	Low	Okay	Low	Low	High	Okay
Other traits	Heavy Robbing	Short tongue; nice white cappings	Low robbing, good comb builders	Supersedure queens produce defensive hives	Long tongue	Brood rearing affected by flow; queen cells always present
* AFB = American foulbrood ** EFB = European foulbrood						

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