

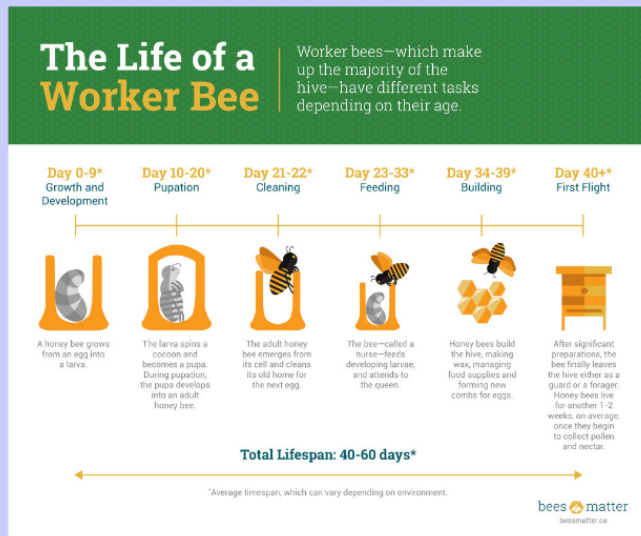
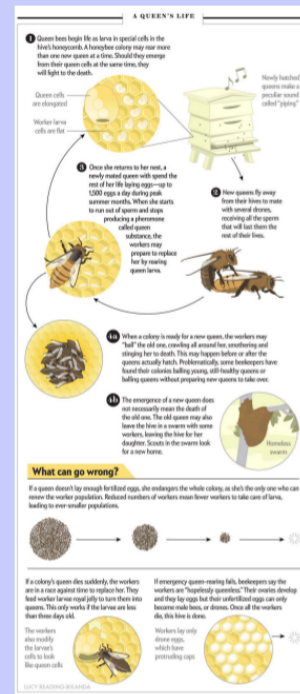
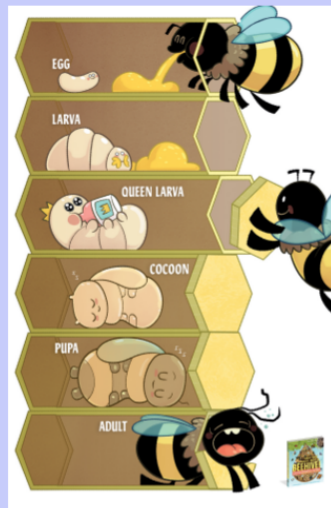
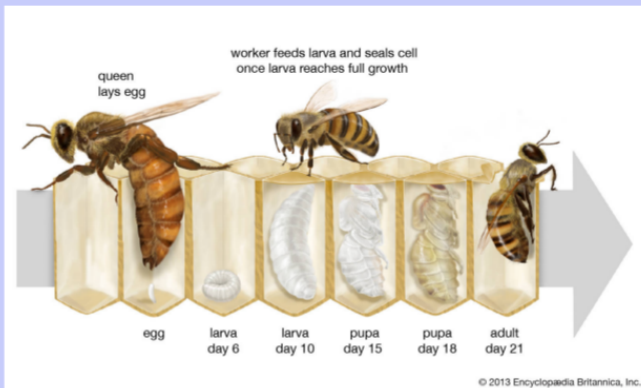
Beginning Beekeeping for Gardeners

Scott Johnson

Founder, Director

Low Technology Institute

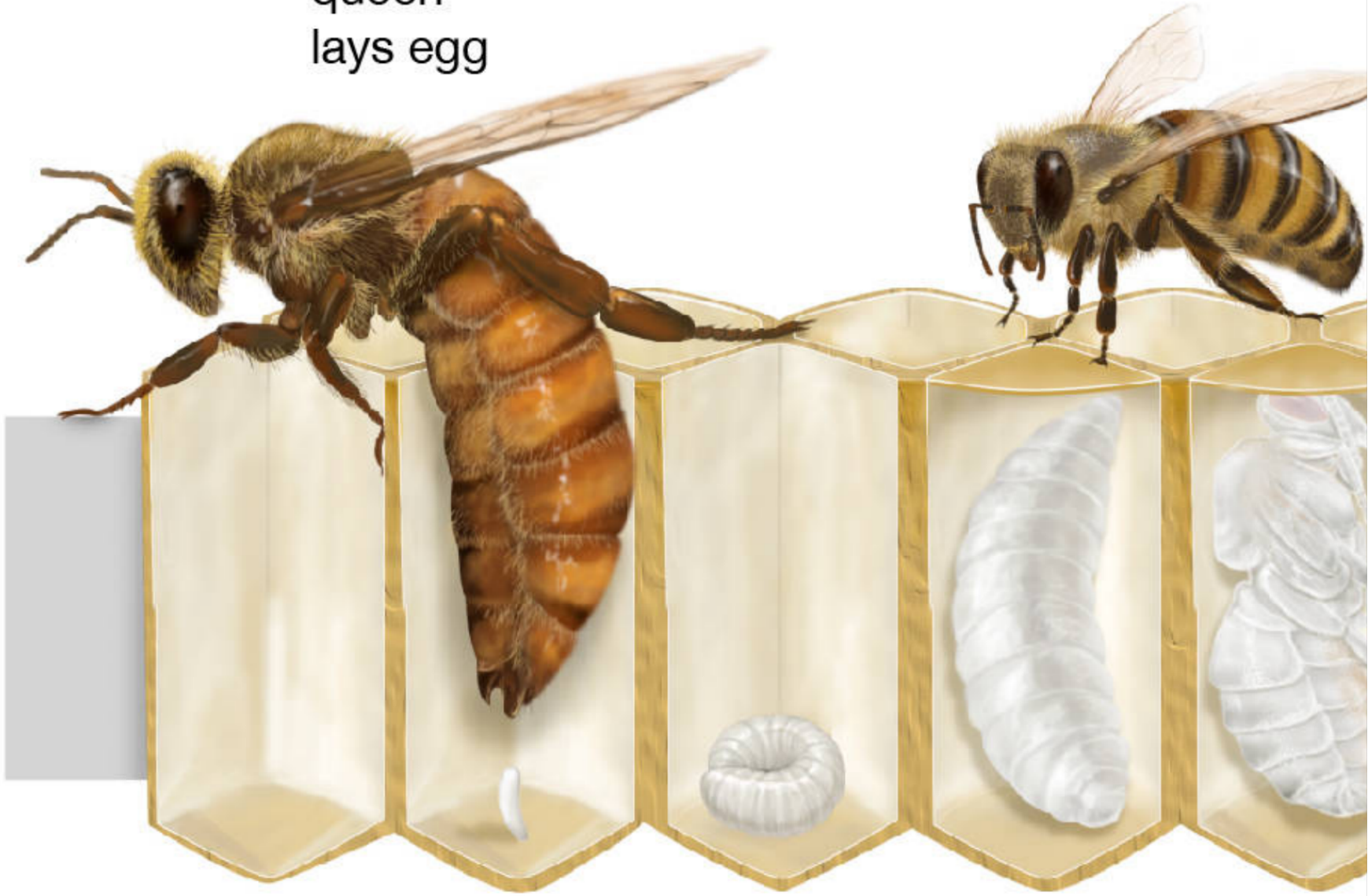
Honeybee Lifecycle



Colony as Macro-organism

worker feeds larva and seal
once larva reaches full gr

queen
lays egg



egg

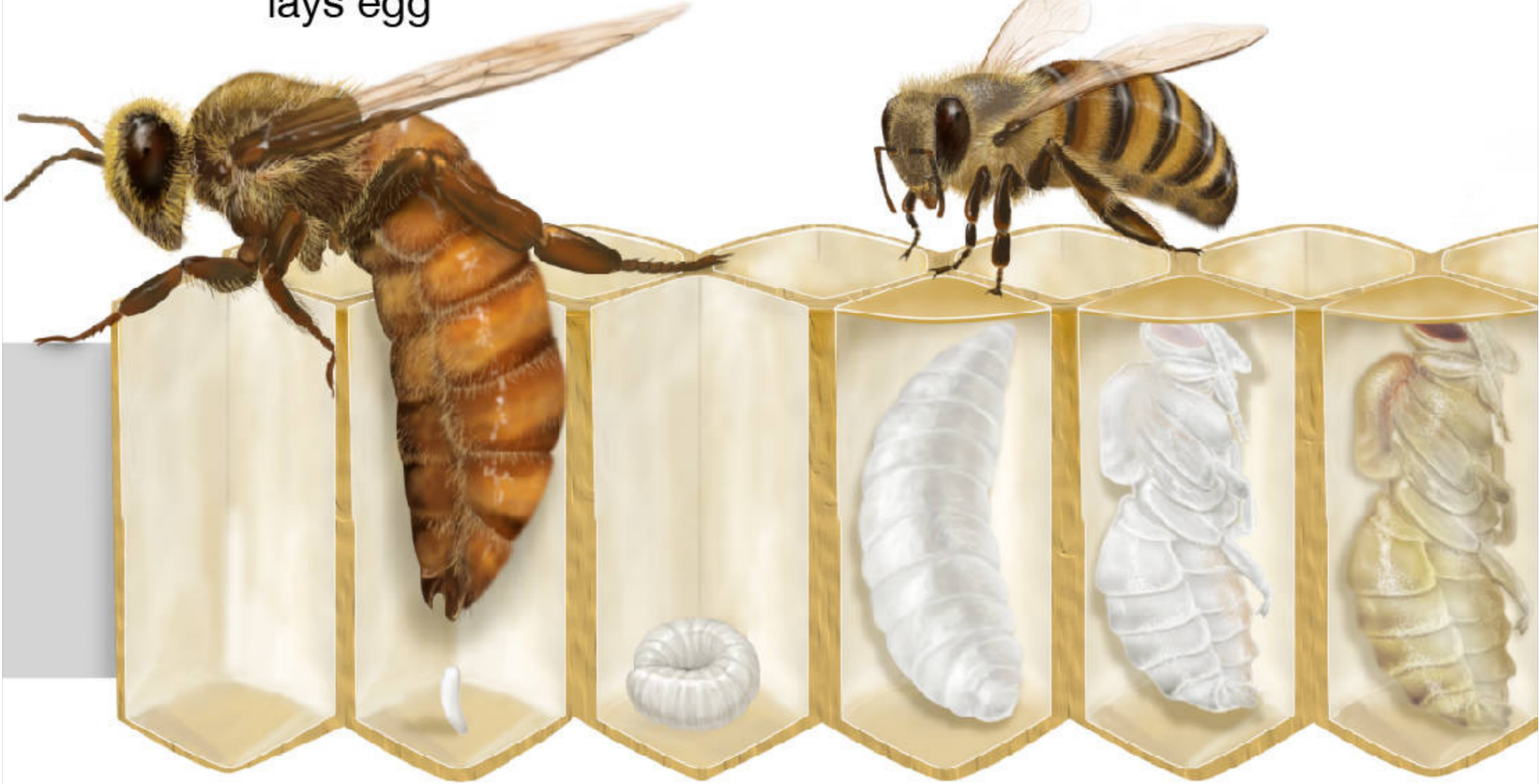
larva
day 6

larva
day 10

pupa
day 15

worker feeds larva and seals cell
once larva reaches full growth

queen
lays egg



egg

larva
day 6

larva
day 10

pupa
day 15

pupa
day 18

worker feeds larva and seals cell
once larva reaches full growth



larva
day 6

larva
day 10

pupa
day 15

pupa
day 18

adult
day 21

EGG



LARVA



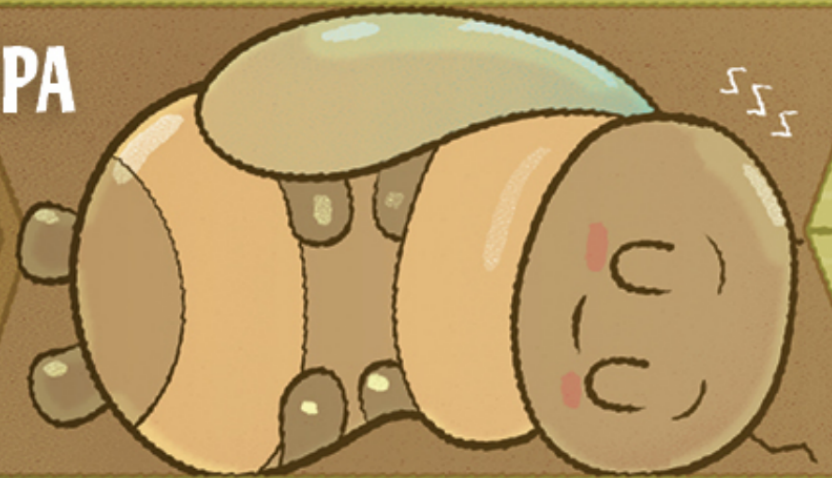
QUEEN LARVA



COOON

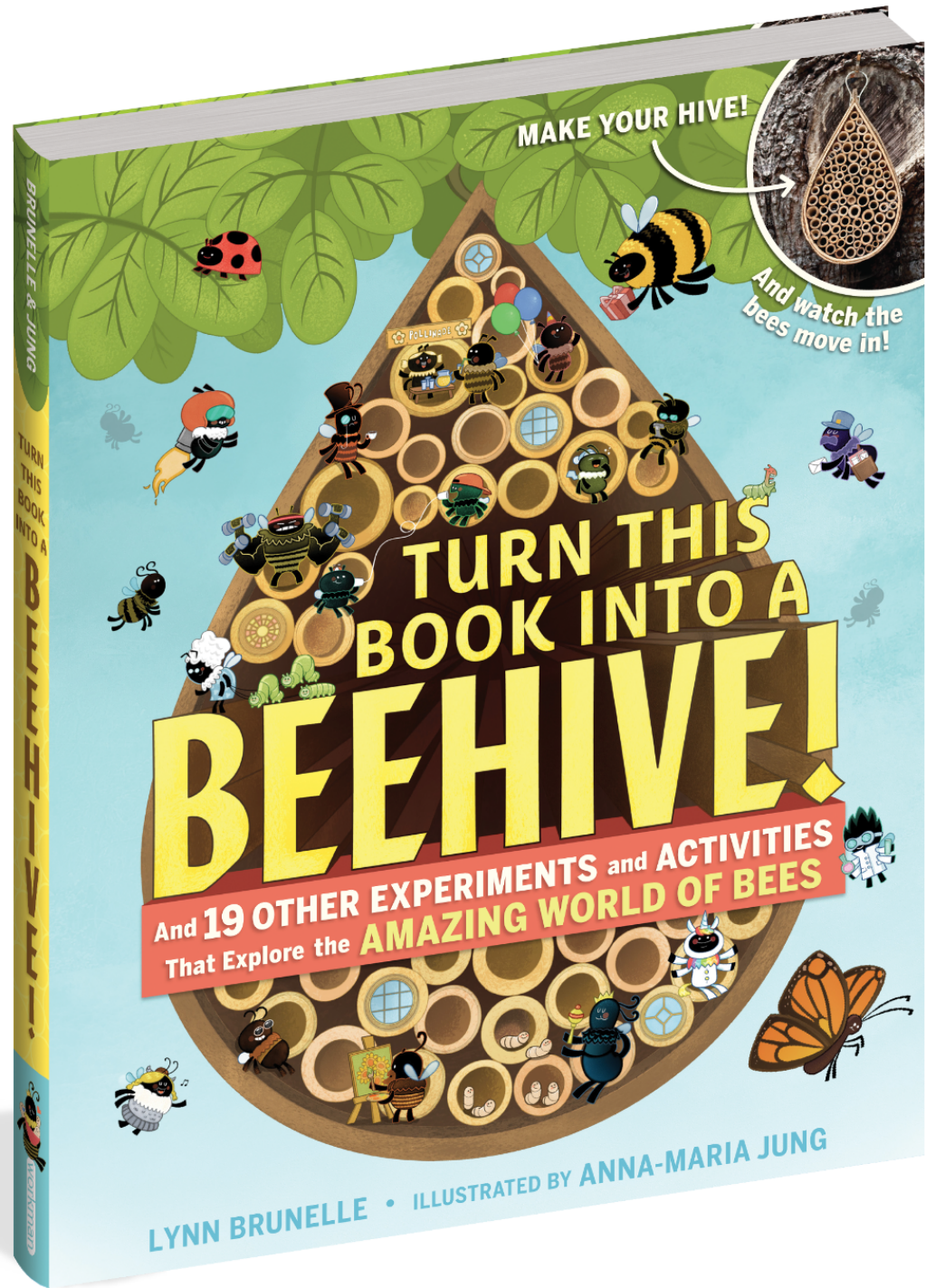


PUPA



ADULT





LYNN BRUNELLE • ILLUSTRATED BY ANNA-MARIA JUNG

The Life of a Worker Bee

12

Day 0-9*

Growth and
Development

Day 10-20*

Pupation

Day 21-22*

Cleaning



A honey bee grows from an egg into a larva.



The larva spins a cocoon and becomes a pupa. During pupation, the pupa develops into an adult honey bee.



The adult honey bee emerges from its cell and cleans its old home for the next egg.

Day 21-22*
Cleaning



The adult honey bee emerges from its cell and cleans its old home for the next egg.

Day 23-33*
Feeding



The bee—called a nurse—feeds developing larvae, and attends to the queen.

Day 34-39*
Building



Honey bees build the hive, making wax, managing food supplies and forming new combs for eggs.

Day 40+*
First Flight



After significant preparations, the bee finally leaves the hive either as a guard or a forager. Honey bees live for another 1-2 weeks, on average, once they begin to collect pollen and nectar.

Total Lifespan: 40-60 days*

14

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:
.

NURSE BEE

This bee takes care of the eggs and developing larvae.



find the flowers. She returns with a belly full of nectar or baskets full of pollen to give to a worker bee. A forager specializes in either water, nectar, or pollen.



UNDERTAKER BEE

This bee keeps the place clean. She gathers the bodies of dead bees that could spread infection and carries them to the opening of the nest, where she tosses them out.



NEST BEES stick around the nest. They make wax, build honeycomb, gather nectar from foragers to create honey, and keep the nest clean and temperate.



FANNING BEE

This bee uses her wings to cool the queen, keep the eggs cold in hot months, fan the honey so it evaporates and becomes the right consistency, or keep the nest at the perfect temperature and dryness.

search for food.

and kee

.....
:
COURT BEE

This bee stays within antenna distance from the queen at any given moment. She makes sure the queen is fed, clean, warm, dry, healthy, and producing eggs.

GUARD BEE.....
:
:

This bee is the



GUARD BEE

This bee is the colony's first line of defense. She stands watch, attacks intruders, and warns the colony if there's danger.



FORAGER BEE

This bee gets the information from the forager scout and takes off to find the flowers. She returns with a belly full of nectar or baskets full of pollen to give to a worker bee. A forager specializes in either water, nectar, or pollen.

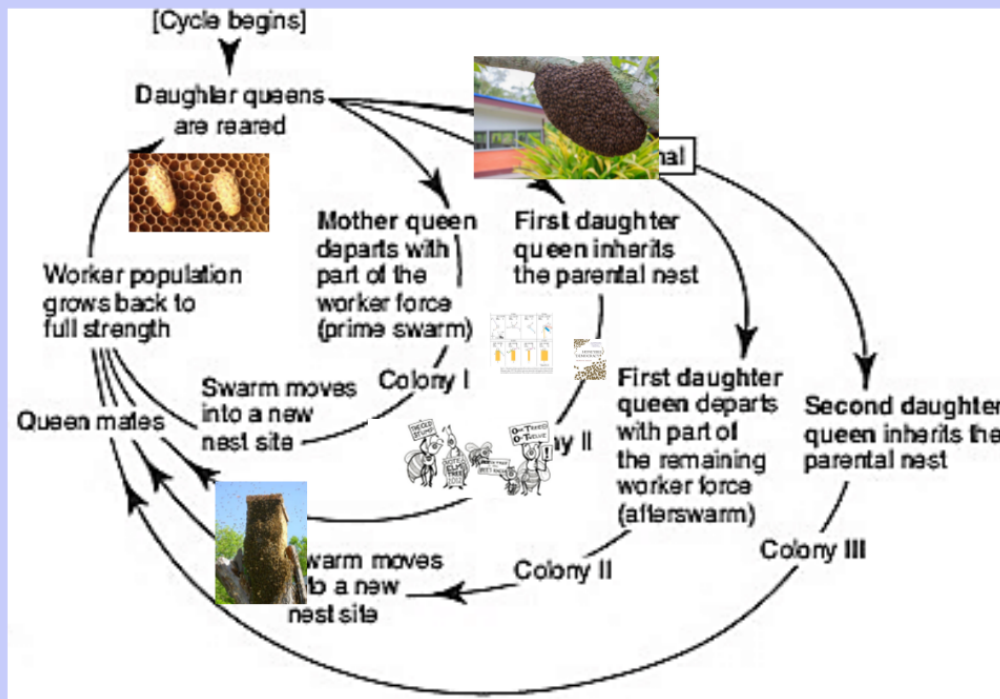


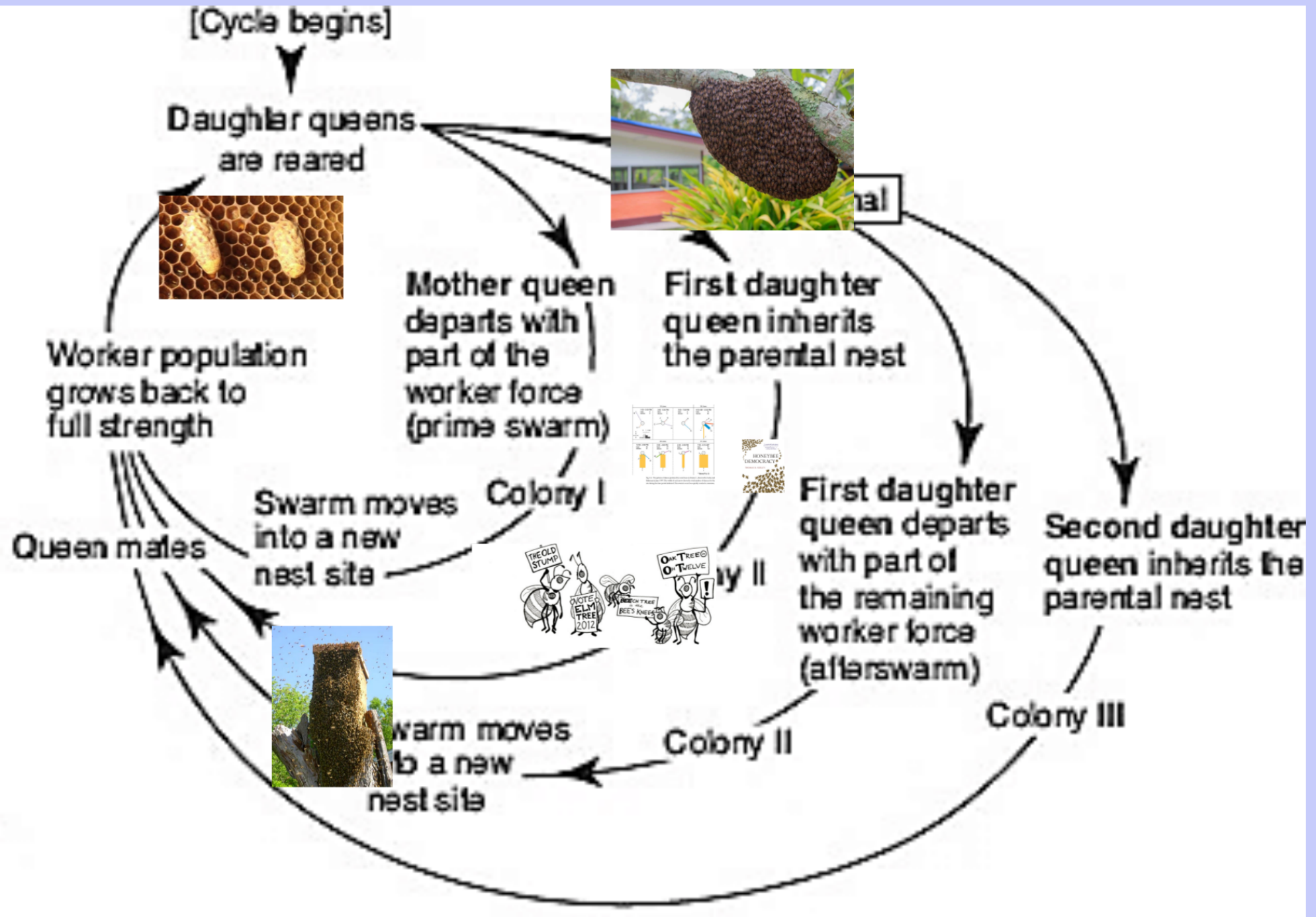


FORAGER SCOUT

This bee explores the neighborhood looking for flowers and other food sources. She then flies back to the colony to report back.

Colony as Macro-organism





Daughter queens are reared



M



Mother queen
 departs with
 part of the
 worker force
 (prime swarm)

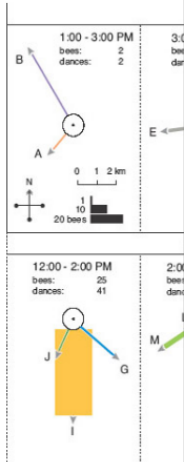


Fig 4.6 The path of a prime swarm during the time of a nuptial flight.



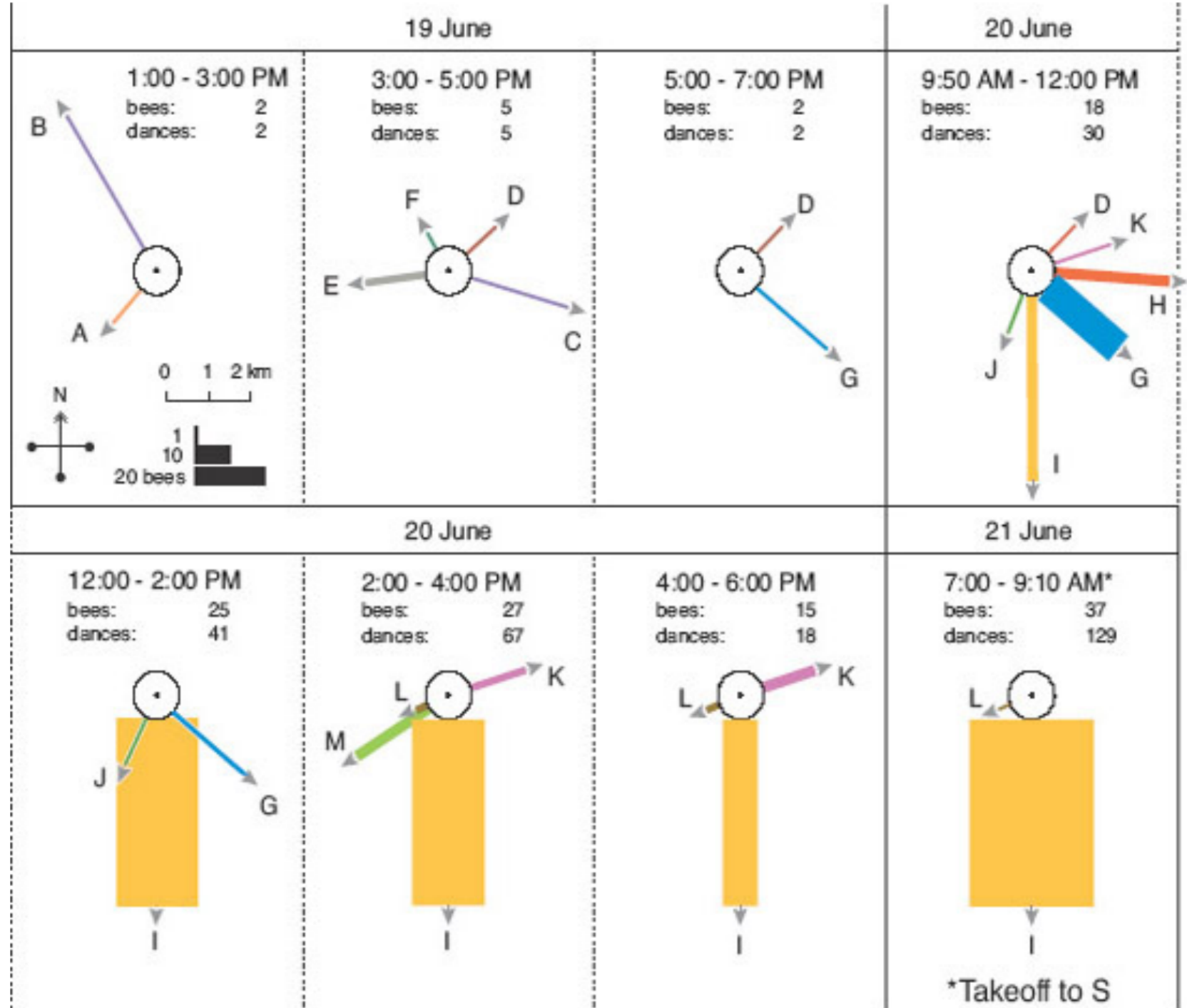
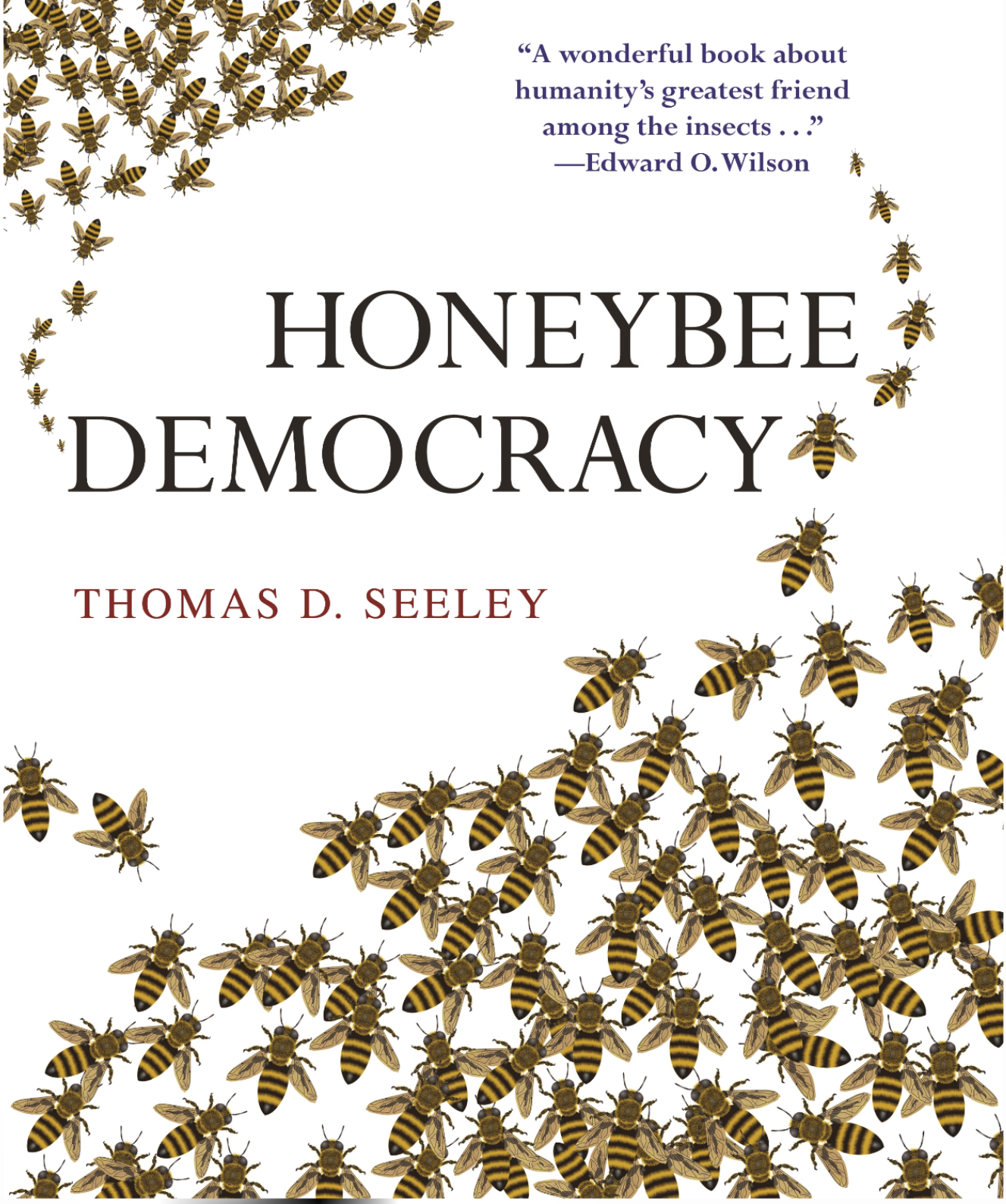


Fig. 4.6 The pattern of dances produced by scout bees on Swarm 1, observed by Seeley and Buhrman in June 1997. The width of each arrow shows the total number of dancers for the site during the time period indicated. This swarm's scout bees quickly reached a consensus



“A wonderful book about
humanity’s greatest friend
among the insects . . .”
—Edward O. Wilson

HONEYBEE DEMOCRACY

THOMAS D. SEELEY



THE OLD
STUMP

NOTE
ELM
TREE
2012

this
BEECH TREE
is the
BEE'S KNEES

OAK TREE in
OH TWELVE

!

MAY

**Swarm moves
into a new
nest site**



war

b a

Daughter queens
are reared



Worker population
grows back to
full strength

Moth
dapa
part
work
(print

113

Beginning Beekeeping

Site

Equipment

Getting and "Installing" Bees

Keeping Bees

A Word About Mites

Honey?

Site Equipment

Getting and "Installing" Bees

Keeping Bees

A Word About Mites

Honey?

Considerations for Gardeners

Keeping Neighbors Happy
 Understanding Pollination Limitations
 Further Siting Considerations
 Double Check Pollinatees

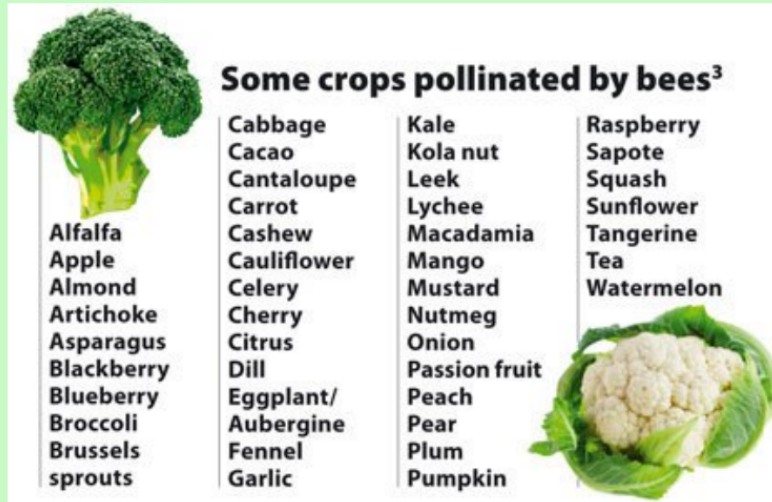


Keeping Neighbors Happy

Understanding Pollination Limitations

Further Siting Considerations

Double Check Pollinatees





Some crops pollinated by bees³

Alfalfa
 Apple
 Almond
 Artichoke
 Asparagus
 Blackberry
 Blueberry
 Broccoli
 Brussels
 sprouts

Cabbage
 Cacao
 Cantaloupe
 Carrot
 Cashew
 Cauliflower
 Celery
 Cherry
 Citrus
 Dill
 Eggplant/
 Aubergine
 Fennel
 Garlic

Kale
 Kola nut
 Leek
 Lychee
 Macadamia
 Mango
 Mustard
 Nutmeg
 Onion
 Passion fruit
 Peach
 Pear
 Plum
 Pumpkin

Raspberry
 Sapote
 Squash
 Sunflower
 Tangerine
 Tea
 Watermelon



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