



The dark side of beekeeping

Carolyn Breece, Oregon State University

Varroa destructor



Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21



egg

larva

pupa

3 days

6 days

12 days

Honey bee worker

DAY

1 2 3 4 5 6 7 **8** 9 10 11 12 13 14 15 16 17 18 19 20 21



Honey bee worker

DAY

1 2 3 4 5 6 7 8 **9** 10 11 12 13 14 15 16 17 18 19 20 21





Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 **12** 13 14 15 16 17 18 19 20 21



Male

Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 (17 18) 19 20 21



Female deutonymph

Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 **20** 21



The first daughter mite is now mature.

Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 **21**



The second daughter is now mature.

Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 **21**



Honey bee DRONE

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 **24**





Apis cerana: Eastern honey bee



Table 1. Duration of the life cycle (days) of different castes of *A. cerana* and *A. mellifera* modified from [15].

Stage	Worker		Drone		Queen	
	<i>A. cerana</i>	<i>A. mellifera</i>	<i>A. cerana</i>	<i>A. mellifera</i>	<i>A. cerana</i>	<i>A. mellifera</i>
Egg to larva	3	3	3	3	3	3
Larva to pupa	5	6	6	7	4–5.5	5
Pupa to adult	11	12	14	14	6–7.5	5
Total	19	21	23	24	13–16	13

Honey bee worker

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 **20** 21



The first daughter mite is now mature.

Apis cerana emerges

Deformed wing virus



Parasitic Mite Syndrome

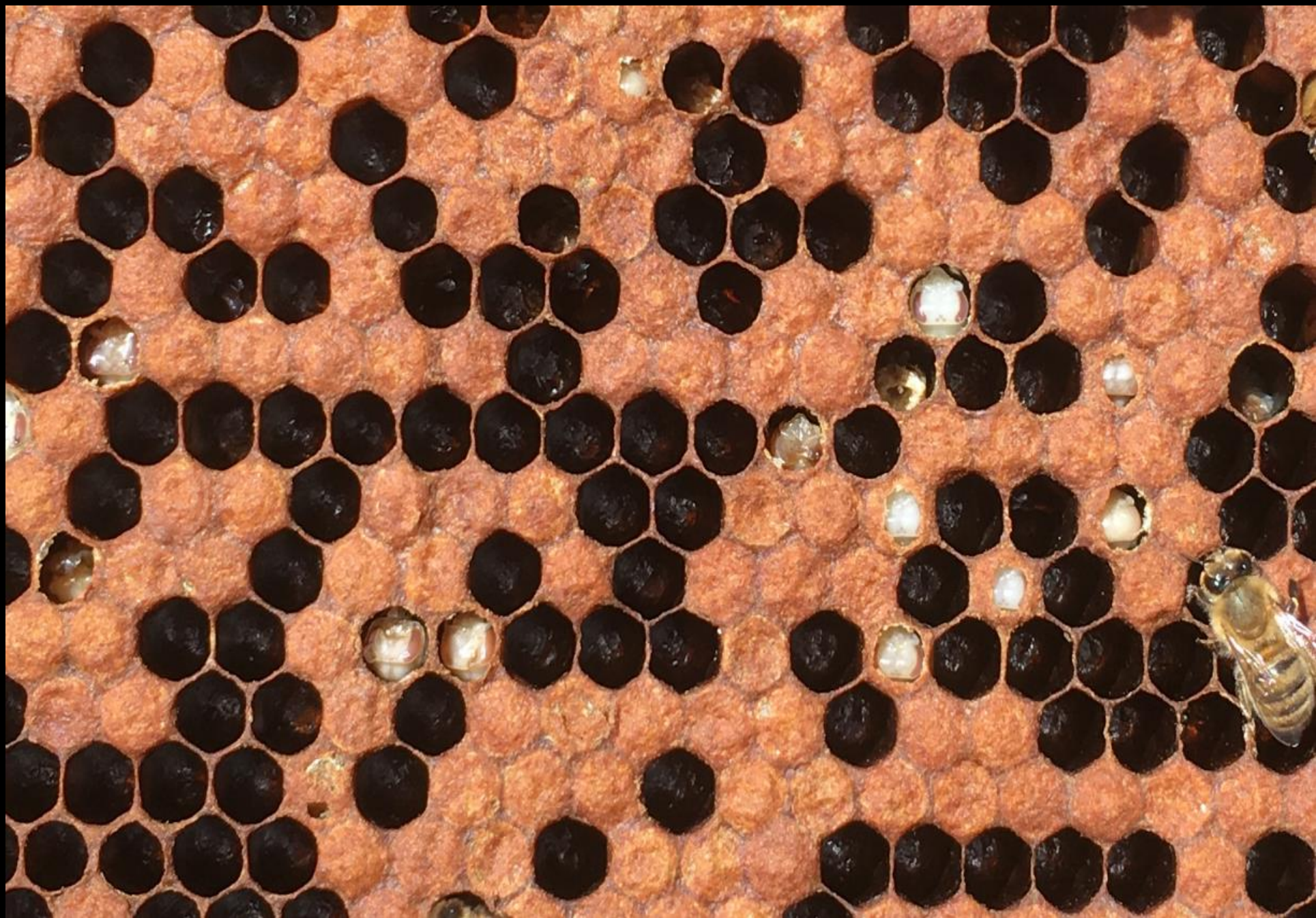


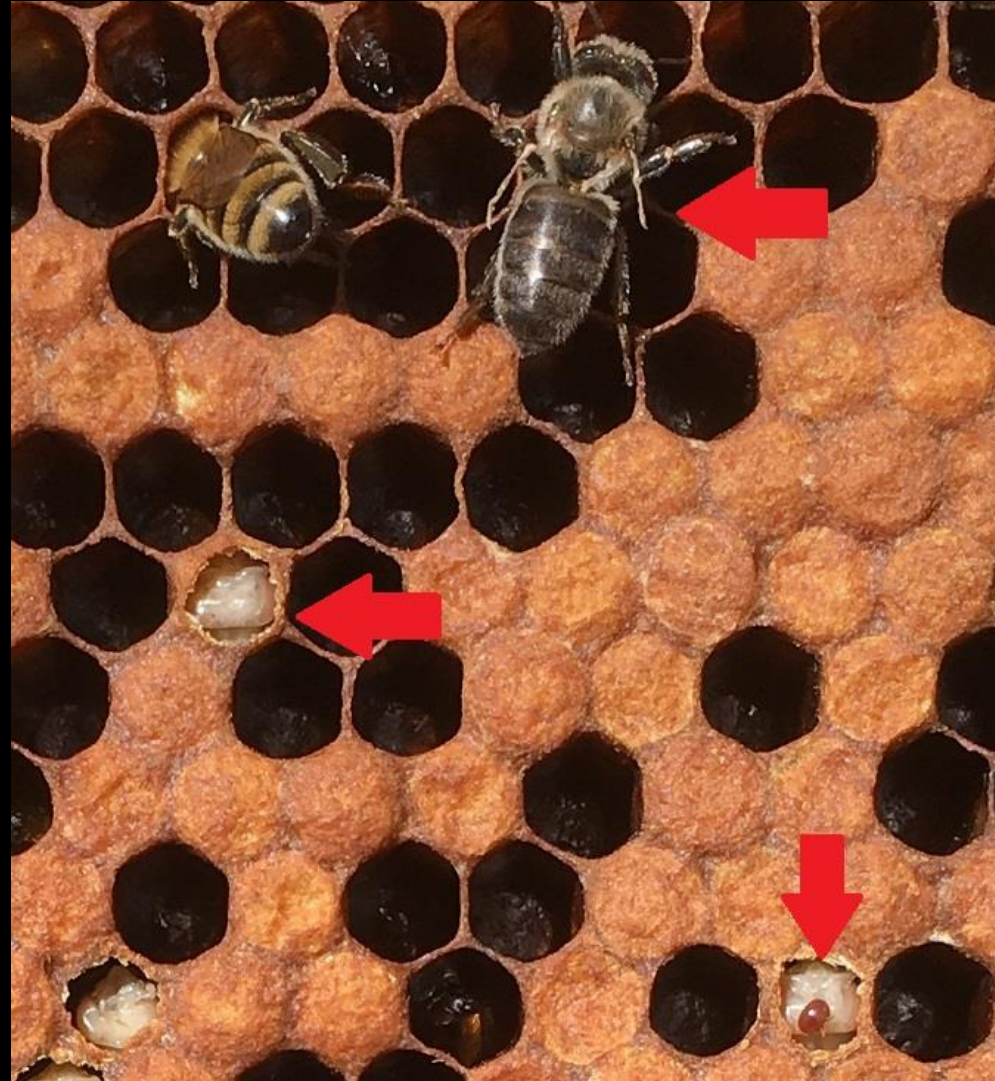
Advanced stages of parasitic mite syndrome

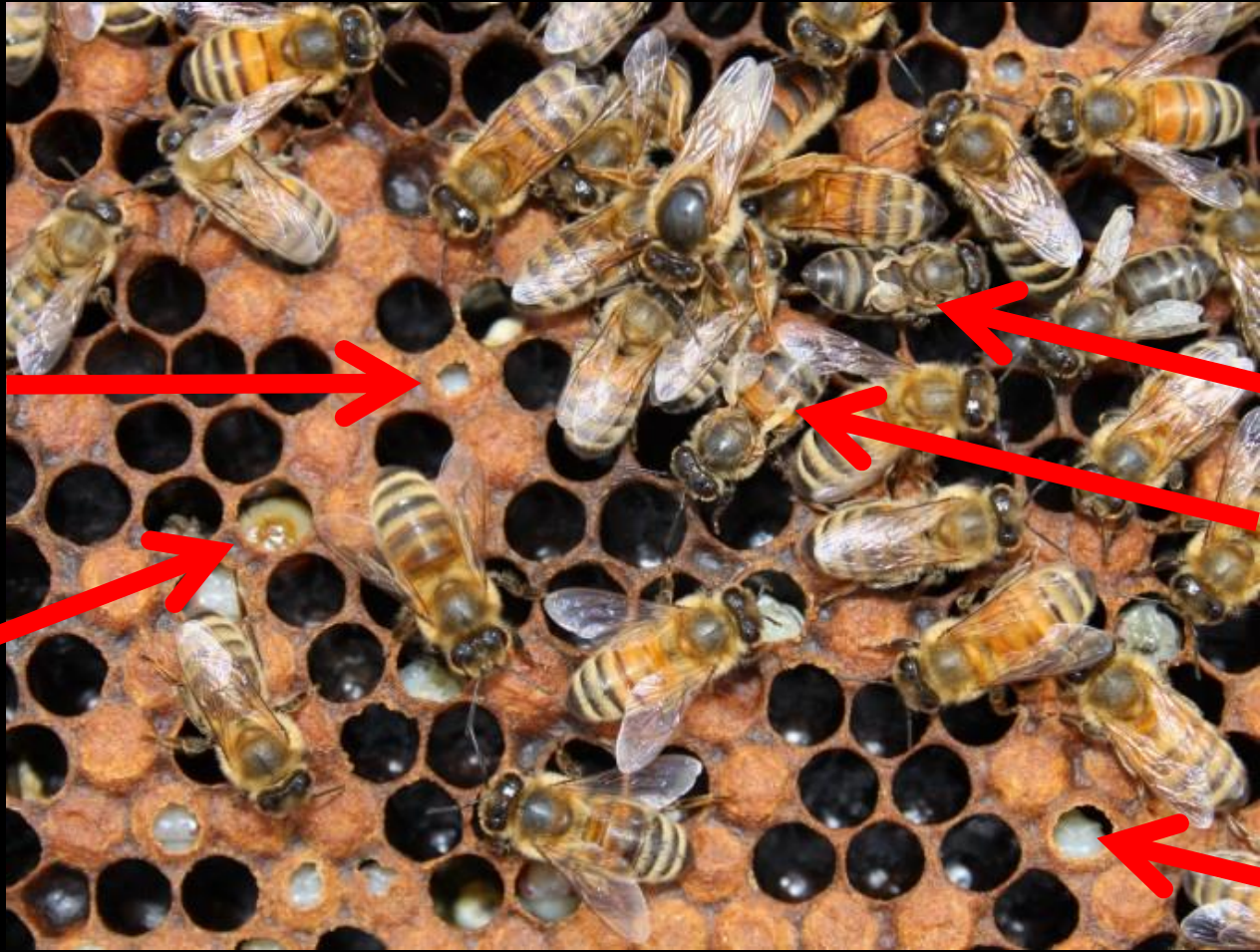










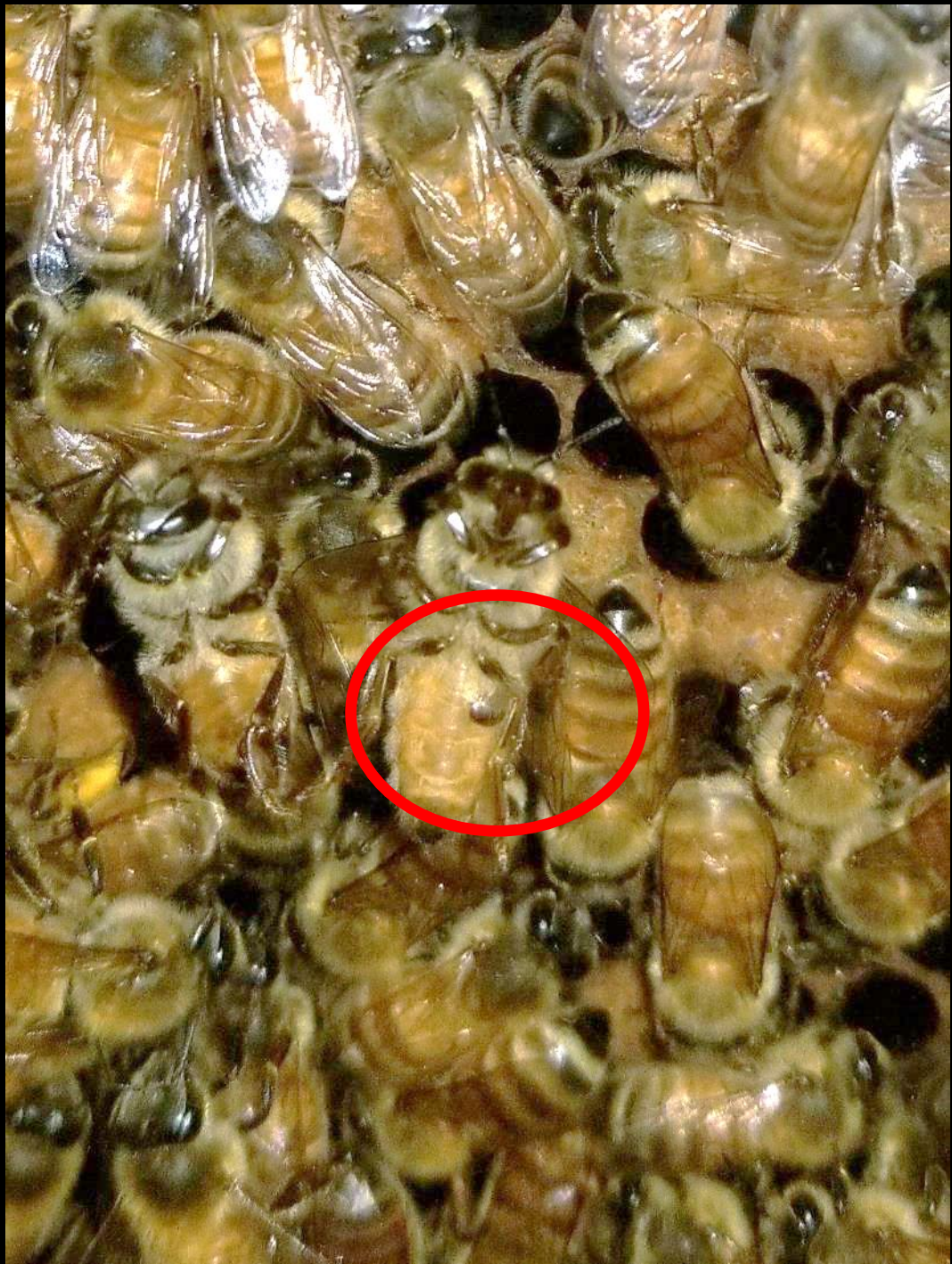


OSU Colony Autopsy Clinic

**“I don’t have mites...
I don’t see them.”**









Food and Environment Research
Agency (Fera), Crown Copyright

STOP LOOKING FOR MITES

Honey bee DRONE

DAY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 **24**



Sampling method:

**Alcohol wash using
the Varroa EasyCheck**





Sampling method:

Powdered sugar shake



Sampling method: Sticky board



Varroa counts per 300 bees

	August 1
1	3
2	2
3	1
4	28
5	3
6	0

Varroa counts per 300 bees

	August 1	Sept. 3
1	3	64
2	2	28
3	1	23
4	28	49
5	3	60
6	0	25

Varroa counts per 300 bees

	August 1	Sept. 3	Sept. 12
1	3	64	36
2	2	28	51
3	1	23	26
4	28	49	75
5	3	60	87
6	0	25	33

DON'T GET COMFORTABLE!

TOOLS FOR VARROA MANAGEMENT

A GUIDE TO EFFECTIVE VARROA SAMPLING & CONTROL

HEALTHY BEES • HEALTHY PEOPLE • HEALTHY PLANET™



**HONEY BEE
HEALTH
COALITION™**

www.honeybeehealthcoalition.org



Treatment options: Chemical options

- Apiguard and Api-Life-Var (Thymol)
- Mite Away Quick Strips or Formic Pro (Formic acid)
- Oxalic acid
 - Dribble
 - Spray
 - Vaporizer
 - Glycerin towels?
- HopGuard (Hop extract)
- Api Var (Amitraz—synthetic)
- CheckMite/Apistan: steer clear



Mite Away Quick Strips

Sample AFTER treatment!

What else can you do about mites?

- Make splits, trap mites in drone brood
- Mite-resistant stock
- Advocate for mite-resistant bee breeding and healthy drone production
- Advocate for more research on mites

You cannot do nothing.

Do your **very best** to control Varroa

- There is no “silver bullet” to varroa control
- Monitor to know level of mites
- Integrate controls to keep level <1-2%
- Always sample after treatment

DON'T LET UP

THANK YOU



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Photo: Dan Wyns