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February 2014 LCBA Newsletter

In This Edition:

- **Upcoming LCBA Events: Speakers, Workshops, Classes**
- **January 8th Monthly Meeting Notes:**
 - **Yellowjacket Woes: Friend or Foe ~ Carl Roush**
 - **Business Meeting Notes ~ Youth Scholarship Update & More**
- **Special Request from Willapa River Beekeepers: Contact WSDA Re: Plan to Grant Imidacloprid Use Permits in Willapa Bay**
- **Bees in the News:**
 - **Can RNA Interference Silence Varroa Mites' Genes?**
 - **Tobacco Ringspot Virus Infects Bees Via Pollen**
 - **Drones More Prone to Nosema Than Workers: Finding May Help Explain Recent Queen Failures**
 - **EPA's New Neonicotinoid Warning Label Unveiled Amid Charges That It Allows Honey Bees & Native Pollinators To Be Legally Killed**
 - **Exposure to Pesticides Makes Bumblebee Workers Smaller**
 - **Bee Shortages Challenge European Crop Pollination**
 - **Australia Faces Honey Shortage As Heat Waves Melt Hives**
 - **International Honey Marketing: a Comprehensive Report**
 - **Common Crop Pesticides Found To Kill Honey Bee Larvae in the Hive**
- **Announcements & Help Wanted**

Questions? Suggestions? Resources you'd like to share, stories you'd like to tell?

Please contact LCBA Secretary Susanne Weil: susanne.beekeeper@gmail.com or call 360 880 8130.



THE 12TH BEE SAYS:

GO HAWKS!!!!

Photo, left, is a hive body painted by Tim Weible at the Honey Hut.

UPCOMING LCBA EVENTS:

February 8: Hive Building Workshop {Langstroth hives}

When: Noon to 4 p.m.

Where: Email Susanne.beekeeper@gmail.com or call 360 880 8130 for directions.

What to bring: woodenware, frames, foundation – and questions! LCBA will provide tools, glue, & screws. If you need woodenware, check the “Beekeeping Supplies” link under “Resources & Links” on our website, or call Susanne (see contact info above). We’ll build hive bodies, supers, telescoping covers, and put together frames; we’re not making screened bottom boards, as those are complex. Coffee, tea, hot chocolate & snacks will be provided. Please RSVP if you can so we have an idea of numbers! Attending this workshop is free; if there are more participants than equipment, first crack goes to members.



LCBA members Matt & Jennifer Taylor, left, & Terrie Phillips, right at 2013 Hive Building Workshop

February 12: LCBA Monthly Meeting

When: 7 – 9 p.m. Social Time 6:30 to 7 – Come Talk Bees!

Where: 103 Washington Hall, Centralia College

Speaker: Wilma Sofranko

Topic: KiReeCo Project: Training Kenyan Beekeepers in 2013 & Beyond

Business Meeting: Package Bee Order News; Monthly ; Youth Scholarship Program update; Q&A.

KiReeCo ~ the Kisii Rural Education & Empowerment Coalition ~ is LCBA's Sister Beekeeping Organization in Kenya (website, <http://kireeco.wordpress.com>). Founder Wilma Sofranko writes: "On October 30-Nov 1 KiReeCo trained 58 Marani community members in beekeeping and honey production using Langstroth hives. A few have been using Kenyan top bar hives and many are beginning beekeepers. The three day training included bee anatomy, bee temperament, diseases and predators, forage plants, honey production, markets, honey health and nutrition, hive management, and more...." Wilma will tell us more on February 12!

(Below, Langstroth hive propped in a tree, local style; note termite damage, a serious threat to hives in Kisii; at right, new beekeepers with their just-assembled hive bodies.)



February 15: *More Than Honey* movie – East County Showing

When: 2 to 3:30 p.m., with discussion to follow

Where: The Roxy Theater 233 West Main Avenue, Morton, WA 98356. Free & open to the public: suggested donations to benefit LCBA's education programs & the Roxy Theater gladly accepted. Repeat showing of Markus Imhoof's award-winning 2013 film that explores possible causes of honey bee deaths from Switzerland to California, China to Australia. Stunning footage of bees at work; fascinating questions about how people coexist with pollinators. For preview, visit: <http://vimeo.com/45684169>. Questions? Call 360 880 8130 or email susanne.beekeeper@gmail.com. Below right, "MTH" director Markus Imhoof with remote-controlled helicopter used to capture footage of bees in flight (KinoLorber Productions; below left, bee approaching almond blossom, NPR.org).



February 22: “Getting Started in Beekeeping” at Gardening For Everyone

When: 2:15 – 3:30 p.m.

Where: Washington Hall 103, Centralia College

LCBA President Norm Switzler, Secretary Susanne Weil & Past-president Peter Glover will lead this overview of what’s involved in beekeeping – time, equipment, costs, rewards, “bee bio 101,” & more, including preview of our fall LCBA/WSBA Apprentice class (see below). PowerPoint slideshow plus “show & tell” demonstration equipment. Children welcome. Free & open to the public – if you have friends interested in starting beekeeping, please let them know!

March 1, 8, 15, 22, 29: LCBA/WSBA BEGINNING BEEKEEPING CLASS

When: 1 - 4 p.m. all 5 Saturdays in March

Where: Old Credit Union Building, 156 N.W. Chehalis Avenue, Chehalis, WA 98532

Cost: \$30 per person /\$45 per couple

Registration Process & Brochure: please fill out the registration form – the class brochure is attached to this newsletter – & send to LCBA Secretary Susanne Weil, PO Box 787, Onalaska WA 98570. Payment is by checks (made out to “Lewis County Beekeepers’ Association” only – not “LCBA”) or cash only – sorry, no plastic. Class size is limited, but first day enrollment is possible – first come, first served.

Course Description: This beginning course in the Washington State Beekeepers’ Association’s Master Beekeepers’ Program builds core beekeeping skills. Topics include: basic bee biology, equipment & how to set up your apiary, seasonal management processes, identifying & managing pests, honey harvesting, & more. A great introduction for “newbees” or refresher for those getting back into beekeeping. Those who complete the open-book, open-note quizzes earn the WSBA Apprentice certificate & are eligible to proceed to WSBA’s Journeyman & Master Beekeeper courses.

Course Materials: WSBA’s beginning beekeeping manual & LCBA’s informational PowerPoints & demonstration materials supplement classes. Student questions are welcome!

Course Instructors: WSBA-certified instructors are board members of the Lewis County Beekeeping Association: LCBA President Norm Switzler, Secretary Susanne Weil, & Past Presidents, Peter Glover & Bob Harris.

Post-Course Support: free hands-on mentor workshops (see topics, listed below March monthly meeting); LCBA members can ask for an individual mentor, as well as get discounts on LCBA package/nuc bee orders.

Course Sponsors: Lewis County Beekeepers' Association, Washington State Beekeepers' Association (WSBA), and WSU - Lewis County Extension.

Questions? Contact LCBA Secretary Susanne Weil: susanne.beekeeper@gmail.com or call 360 880 8130.

March 12: LCBA Monthly Meeting

When: 7 – 9 p.m.; Social Time 6:30 to 7 – Come Talk Bees!

Where: 103 Washington Hall, Centralia College

Topic: Zombie Fly Parasitism of Honey Bees ~ University of Washington Research

Speakers: Dr. Evan Sugden and his undergraduate research team – Ashley Powell, Hannah Dayley, & Fiona Kana – will share their work on how zombie flies are affecting honey bees in western Washington, plus information about UW’s teaching apiary & ongoing Nosema

research. For an overview of Dr. Sugden's "Science with Bees" UW class, see the November 2013 edition of *Bee Culture*.

Business Meeting: Spring management Q&A.



Above left, zombie fly analyzed in OSU laboratory; at right, honey bee killed by zombie fly parasitism. Note the brown, rice-grain-like pupae of the zombie flies; these flies inject their eggs into bees' abdomens. (Images from OregonLive.com)



Above, our Jan 8 speaker, Carl Roush, holds a paper wasp nest (photo, The Daily News, 2009)

MEETING NOTES: JANUARY 8TH

Our January speaker, Carl Roush, retired from Lower Columbia College in 2013 after many years of teaching biology. He began studying yellowjackets back in 1975, earning his Masters' in 1978, and this fascination has driven not only his career, but his retirement too: he collects yellowjackets for pharmaceutical purposes. Their venom can be used to treat those suffering allergic reactions to stings. If you want yellowjackets removed between Longview and Centralia, you can call Carl at (360) 578 2018; those north of Centralia can contact Mike Juhl of Olympia (866 1834; "Bee Man Exterminators"; website: <http://hornetnestsfreeremoval.com/573/9752/index.html>). And yes, "yellowjacket" is one word, regardless of what spell-check tells you or what is found in many print publications!

Carl's PowerPoint is attached to this newsletter in PDF format and posted on our website under the Monthly Meeting link.

Honey Bees, Wasps, Yellowjackets, Hornets - Family Relations: Carl began by clarifying the family relationship between honey bees, wasps, yellowjackets, and hornets. Both honey bees

and yellowjackets, wasps, etc., are members of the taxonomic order *Hymenoptera*. However, whereas honey bees belong to the family *Apidae*, yellowjackets and their kin belong to the family *Vespidae*. Both are families of stinging insects, but whereas *Apidae* are stinging insects that pollinate and make honey, *Vespidae* are stinging insects that eat meat, though the spring queens may occasionally sip nectar, (not a significant energy source, which is provided by their stored fat, "fat body"). While some members of the family *Apidae*, like honey bees, are social, others are solitary (such as leafcutter bees); in contrast, members of the family *Vespidae* are primarily social.

Meet the *Vespidae*: Under the *Vespidae* umbrella, we find yellowjackets, wasps, and hornets, each of which belong to different subfamilies: Carl's powerpoint, attached in PDF, has links to visit for details. The subfamily *vespinae*, the yellowjackets, technically are wasps. However, the insects we call paper wasps belong to a different subfamily, the *Polistinae*, characterized by long bodies, narrow ("wasp") waists, and long, dangling legs that make them appear awkward as fliers. There are two genera of *vespinae*: *vespula* – cavity nesters like hornets – and *dolichovespula*– the wasps that build paper-like nests on the outside of structures. Carl demonstrated both paper wasp nests and comb from cavity nesters (see below: on the left, Carl holds up a paper wasp nest (photo courtesy of XXX); at right, a cross-section of a cavity nest of yellowjackets that shows brood comb).



Social Behavior: Yellowjackets, paper wasps, and hornets all display social behavior: they live in colonies whose generations overlap, and they divide labor with one member as "top dog," as bees do. It was the behavior of yellowjackets that pulled him in while studying for his Masters' at WSU, where he took the photograph, below, showing yellowjackets marked with red dots to help him observe their dominance hierarchy:



Seasonal Cycles: Like honey bees, yellowjackets have a seasonal cycle that includes a winter diapause: however, among yellowjackets, only the newly-laid, end-of-summer queen overwinters, curled up in a shelter. If you bring wood from your woodpile inside your warm house, your evening may be livened up by the awakening of a hibernating yellowjacket queen. Left alone, she would wake up in March, when you may see a few flying around. Usually, they won't find a place to nest yet and will return to diapause, but eventually, the warming weather will enable her to find a nest site and start her breeding cycle. She will have mated the previous fall; like the honey bee, the yellowjacket queen stores semen in a spermatheca. At end of her cycle, the queen stops producing workers and makes solely queens and males. A large nest will produce about 400 queens, though most don't survive. For a short YouTube video displaying a queen wasp, visit: <https://www.youtube.com/watch?v=moc5wRRcPlg>.

Although yellowjackets do not re-use a nest, they will re-use brood comb over the course of a year and its seasons: one way we know this is that we can count the number of brood layers. When they are ready to pupate, they defecate; the next time the cell used, the next one defecates: this is how one can see how many times a brood cell has been used.

Population: A mature colony of yellowjackets will have 500-600 workers: in a big colony, there may be a thousand. If you watch a nest, you can see them adding the wood fiber that they scrape from wood fences and can watch them building from still-wet materials. The attached PDF file of Carl's slideshow displays nests from their embryonic through mature stages.

Ground Nesting Behavior: Ground nesters, like yellowjackets, are of the genus *Vespula*: to view a video showing them carrying dirt – sometimes astonishingly large chunks of dirt for their size – to build their nest, visit: <https://www.youtube.com/watch?v=VNshIU1qgiU>. Underground, they build complex structures that are used for one year only – they never re-use an old nest. Yellowjackets start with one brood comb, then add more, one by one, as needed for colony expansion. To expand, they must cut away the inner fabric of the original nest, and first have to shift their outer covering to do that. They do not reuse the paper they produce: rather, they throw it away in little paper balls. As they expand the cavity to accommodate the expanding nest, they often use mole tunnels to facilitate bringing in new material and carrying away waste, but when necessary, they will excavate the ground, carrying out mud balls and even pebbles. Carl was asked whether moles discourage wasps or vice-versa: no one really knows.

In “nature,” we may find yellowjacket nests not in the ground, but in aerial nests built under structures like eaves or pump houses. They clean out dead larvae, insect parts, etc. Among aspects of their behavior still unknown are what proportion of larvae die and get carried away. To excavate old nests, they simply collect them: no complex equipment is required.



Above left, a yellowjacket nest “in nature”; at right, a rare *Dolichovespula norvegicoides* nest.

One rare form of yellowjacket, *Dolichovespula norvegiocoides*, the so-called “arctic yellow jacket,” is seldom seen: he found the one pictured above in 1986, before which there had never been a whole nest of this species collected - only fragments from Juno, Alaska. He found another in Astoria last summer.

Hostile or Defensive? People often characterize yellowjackets as hostile: in fact, like honey bees, they display degrees of defensiveness, particularly when a colony is struggling. Carl asked: would you be angry if someone pounded on your home, or shot it full of holes? Below, see a nest riddled with .22 caliber holes that surround a hole made by something bigger. See the 22 caliber holes ring around something larger caliber. When he came to investigate, these yellowjackets started hitting him as soon as he got out of his pickup, 25 feet from their nest.



Above left: yellowjacket nest after being riddled with .22 caliber bullets; right, vespa ducalis hornet compared with human fingers.

However, despite their defensiveness, sometimes Carl can actually pet a yellowjacket or paper wasp, as the person in one of the YouTube videos shown petted a hornet. He would not advise trying this with a yellowjacket, however. See photo, above right; to see video, visit: <https://www.youtube.com/watch?v=HuMS3KDNysM> . Note how big she is compared to a human thumb.

Colony Size: The size of a nest does not always predict the size of the colony housed inside. Carl showed contrasting slides, one a huge nest, but small colony; another a large colony crammed into a smaller space. His key question is always: “is it active?” Are one or two per second emerging – an active colony – or do they fly out only sporadically? Some colonies are nearly done for the season by August, as their nesting cycle winds down. In his “small nest, large colony” slide, Carl displayed an amazing cross section of brood: though the nest was small, it contained about 600 insects (see photo, below). He found the nest on a chair a short distance from the caller’s porch: Carl imagined the caller going out at night, picking up the chair, gingerly tiptoeing off his porch, then dropping the chair and running. . . .



Above left, cross-section of yellowjacket brood from an exposed nest built into a chair; at right, classic common yellowjacket nest shows characteristic, tightly scalloped pattern.

Carl showed a remarkable series of photos of typical nests. *Vespula pensylvanica*, the western yellowjacket (above, right), is the type that tries to eat from your plate during a picnic. Note the scalloping that is the definitive feature of these nests.

Eradication Do's and Don't's: Carl argued against using gasoline to eradicate a hive whose opening can be seen (see below). The gasoline chemically plugs that tunnel, and the yellowjackets will just dig a new tunnel – but with a very hostile attitude. The Extension brochure suggests non-chemical interventions, which are the best way to deal with them when they arrive uninvited at your barbecue. Carl thinks that the western yellowjacket, not the bald faced hornet, has the shortest fuse: “they’ll crawl into your pants legs, and - it’s bad.” The nest above, displaying a very tight scallop pattern, is also unusual because usually the common yellowjacket is a cavity dweller: however, this colony, living under a deck, didn’t read the textbooks.



Above: just say no to pouring gasoline into openings to ground nests. . . .

Invasive Species: Yellowjackets, too, have their invasive varieties – and behavioral variations. *Vespula germanica* invaded our area in the mid-1980s, probably in shipping cartons entering the port of Seattle: they had been on the east coast for fifty years. Carl first found one near Winlock

in 1984. Over the next ten to fifteen years, though, regional numbers of these German yellowjackets seemed to dwindle: Carl thinks that they interbred with native yellowjackets, diluting the germanica genetics. On the east coast, 90 percent of the time, you'll find yellowjackets underground, but on our coast, they will sometimes nest in structures.

“Hornets”? Pictured below is *Vespa crabro*: the nest which Carl hung on the podium of our meeting room was a bald faced hornet nest. Technically we do not have hornets - these are different. To see a video of one in a jar, visit:

https://www.youtube.com/watch?v=zPiK_071rmg. Though technically an aerial wasp, they can be found in some odd locations, such as a food dehydrator on one's back porch. On hot days, they will cluster around the opening of their nest and fan as bees do. To see how they react when their nest is pounded upon, visit: <https://www.youtube.com/watch?v=bofEUv6ZYH4>.



Above, *Vespa crabro*: a.k.a. “hornet.”

Social Parasitism & Pestiferous Behavior: Some types of yellowjackets behave as social parasites. For example, *Dolichovespula arctica* does not make workers: they must infest other nests to lay eggs. *Vespula pensylvanica* may usurp the home of *vespula vulgaris*. They can also be pestiferous, realizing that scavenging can be easier than hunting. However, yellowjackets and bald-faced hornets can be beneficial – as predators, they catch insects such as crane fly larvae in gardens. They also eat carrion: to see a video of yellowjackets eating a dead bat, visit: <https://www.youtube.com/watch?v=JXz2m329Dx4>. They regurgitate sugary liquid and feed it to their young: that's why, later in the season, workers seek sugar.

Finding the Nest: To Bait or To Search? To protect yourself and your family, you need to find the nest. To draw them, you can put out bait, hanging a trash fish like a carp, or refuse from a steelhead after cleaning. To locate the nest, wait a few days after hanging the bait: for a couple of days, they will be circling the bait, but once they establish their orientation, they fly in straight lines, as bees do. You can follow trails back to nests, then eradicate them. If you know what yellowjackets look like when they leave their nests, you can walk around, and, when the sun is low on the horizon, you will see insect wings refracting light, like little glowing balls. You can use this to find bee trees, too, if there is a dark background of shaded trees to highlight them.

Collecting Yellowjackets: Carl uses a vacuum to suck yellowjackets out of ground nests, then traps them in the tube with a rubber plug. See photograph below: about 2000 yellowjackets were extracted from this particular nest. Carl uses CO₂ from dry ice to put them to sleep; after 45 minutes, he can dump them out, and they are anesthetized. When he has enough, he ships them

overnight on dry ice to a company in Spokane, where they are stored at super-cold temperatures until venom is needed. Then, they extract the venom and use it for allergy shots, giving minute shots to build up immunity and thus protect people from yellowjacket stings.



Above, Carl's vacuum (left); a tube full of yellowjackets (right)

Venom: The chemical composition of yellowjacket venom is a complex mix of proteins and organic acids. Each species' venom has a slightly different composition from others'. Meenu Singh and others have done extensive work with the venom chemistry. Gary Stelzner asked whether mud daubers sting; Carl said that they do, but they sting to paralyze prey, so it is not the same irritating hurt – mud dauber venom is designed for insects, not for vertebrates, and is mainly used to paralyze spiders.

Individual Reactivity to Stings: Norm Switzler noted that a bee might sting a person who might not react badly while another person might react severely to the same venom; he has noticed that yellowjackets and honey bees are similar in virulence of venom. Norm has had worse stings from honey bees than from yellowjackets and thinks this results from personal chemistry (“our own chemical independence”). Carl agreed, noting that honey bees leave a pulsing stinger behind, thus leaving even more venom in the sting site. A hornet will “poke you multiple times,” and yellowjackets have barbs on their stingers, but they do not lose their guts as honey bees do: when they sting, it is a surgical insertion and removal, unlike honey bees, so hornets and yellowjackets do not die when they sting.

Blackjackets: Asked about the relationship of black to yellowjackets, Carl noted that blackjackets are not a black and white variant of the western yellowjacket, *Vespula pensylvanica*, but a distinct species, *Vespula norvegicoides*, another ground nester, but usually found at higher elevations. In fact, if one uses the genera designations, *Vespula* and *Paravespula*; *V. norvegicoides* is *V. norvegicoides*. Because *V. norvegicoides* is a member of the earlier nesting, smaller colonies (4-600 workers), *V. rufa* group of species. *Vespula pensylvanica* "becomes" *P. pensylvanica*. The *Paravespula* were earlier grouped in the *V. vulgaris* group, later

nesting, larger colonies (800- 4,000 workers), generally considered evolutionarily more advanced. This year, however, many blackjackets were seen. It was also noted that bald-faced hornets were particularly bad this year: they not only prey on bees, but even yellowjackets. Kimo Thielges reminisced about finding them lurking under mailboxes on his postal route

All thanked Carl for his extremely informative and entertaining presentation, and many stayed to ask him questions during our break.



Above, yellowjacket / wasp expert Carl Roush fields questions from LCBA members after his Jan 8 talk.

Monthly Business Meeting:

Treasurer's Report: Treasurer Jon Wade reported on our balance as of this meeting (prior to 2014 dues). January is dues month: the 2014 membership form is up on our website under the "Join Us" link (http://www.lewiscountybeekeepers.org/join_us). ***FYI: Thanks to the Lubbock County Bar Association and other miscreants who dare to share our acronym, Chase, our bank, will ONLY accept checks made out to "Lewis County Beekeepers Association"!*** Please help us all avoid extra paperwork by spelling out our name ☺ If you're not online, call Susanne (360 880 8130) for a hard copy of dues forms.

Youth Scholarship Program: Membership Coordinator Tomme Trikosko gave an update on our pilot youth scholarship program: the application deadline was January 7, and we received two applications for the two available spots. Most of our drawing funds have been set aside to outfit 2 students with all they need to get started (bees, equipment, suits): they will start officially with February's hive building workshop as their first activity. Kent Yates and Tomme will be their

mentors. Tomme knows both young men as students at Toledo High School: they will study the WSBA Apprentice curriculum as part of their biology course this spring.

To Hold Fund-raising Drawings, Yea or Nay? Norm noted that questions had come to board members about why tickets for our monthly drawing were sold at December's holiday potluck, rather than given away, as in past years: the concern had been raised in such a serious manner that the board felt that this group of the whole should discuss it. Norm noted that dues and drawing tickets are LCBA's sole source of income, since we do not charge for workshops, and up until this fall, Lewis County Extension collected all funds from our apprentice course. The board has budgeted \$500 to outfit each youth scholarship student. The board asked the membership if they support the drawings or whether they want to go back to giving items away. The overwhelming response was that a dollar breaks no one, and that raising funds for the youth scholarship program and the Kenyan beekeepers is a worthy effort. It was noted that if someone feels strongly about giving something away, they can do so. Many said they give to help raise funds. A show of hands validated continuing drawings as done in 2013.

Package bee orders: Renzy Davenport reported that though it is still early in the process, it looks like LCBA can combine a package bee order with Olympia Beekeepers' Association. They have a vendor who thinks that assuming normal weather, we should be able to get packages of Carniolans and Italians, as well as nucs and extra queens, by mid-April. Prices will likely be around \$80 and nucs around \$90, though no prices are firm yet: it will be a matter of supply and demand: if overwintering goes poorly, prices will be higher; if there is abundance, they will be lower. Last year our nucs were from Oregon, not California; if we go with Olympia Beekeepers, this year's nucs would be from California. Tim Weible noted that given the drought in California, it is early to tell about numbers. Tim asked about the question of hauling sufficient package numbers; Renzy was told this is not a problem for Olympia's supplier. Renzy noted that Olympia's supplier is insured; Renzy was charged with finding out about insurance for Olympia Beekeepers and was surprised to find how many suppliers are not insured to haul bees. The board will report more details as they arrive and include them in the February newsletter or deliver them at the February business meeting. Norm noted that members are free to order through the club or go with individual vendors.

Queen Bee Blues: Last year, many seemed to suffer queen problems. This seems to have been a nationwide issue. There have been speculations that queens may not have been adequately mated: there was a week when natural breeding should have taken place, but weather was not conducive. Don Hershey asked if anyone kept a record of queen losses: no one had, and Norm noted that we should do so this year. Nucs, too, had varied results. Gordon Bellevue asked about experience with Carnies vs. Italians: he lost his two Carnie queens, but his Italians did well; others had the opposite experience.

Local Queens? Vice President Dave Gaston was not able to attend this meeting, but Norm noted that he will be breeding queens. However, they will not be produced in big numbers and will not be available by the time packages are developed because our weather pushes breeding later. Renzy noted that he can get replacements if queens die quickly (*e.g.*, coming out of the queen cage dead), but check with him for details (Susanne can field questions to Renzy via email, so email her).

Special Request from Willapa Bay Beekeepers:

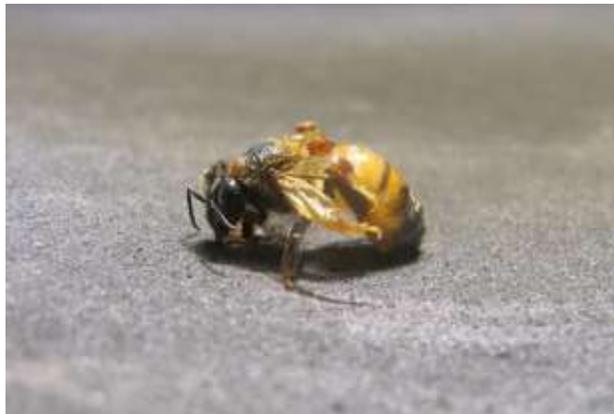
Contact the Washington Department of Ecology As It Considers Granting Permits for Imidacloprid Use in Willapa Bay

The Willapa River Beekeeping Club writes, “The Washington Dept of Ecology beginning the process for allowing the use of imidacloprid in the Willapa Bay. As you know, this is a neonicotinoid and harmful to honeybees. We have an active beekeeping group in this area and there are many hobby beekeepers, as well as a large number of native bees. We'd like to ask your support by asking your members to help by contacting Ecology at the website below and commenting on the use of imidacloprid. Even if you don't live here, your comments count! Ecology is seeking comments through Feb. 15 on the draft EIS and the draft permit to allow the use of imidacloprid in Willapa Bay. See Ecology's website -- <http://www.ecy.wa.gov/programs/wq/pesticides/imidacloprid/index.html> – for ways to submit comments.” For more background, visit: http://www.dailyastorian.com/free/plan-for-spraying-in-willapa-bay-signals-fight-to-come/article_6b1b13b0-7d3a-11e3-95ec-001a4bcf887a.html and also see: <http://oregonsustainablebeekeepers.org/references/>.

BEES IN THE NEWS

Thanks to Gillian Davis, Steve Norton, Norm Switzler, Tomme Trikosko, and Tim Weible for sending news this month.

“Genetic Weapon Against Insects Raises Hope and Fear in Farming” [27 Jan 2014, *The New York Times*]



*Monsanto is exploring the use of RNA interference to kill a mite that may play a role in bee die-offs.
[Photo, Monsanto]*

The Varroa destructor mite's genome was mapped several years ago: can we use that knowledge to stop mites from parasitizing bees? Scientists at the University of Kentucky have teamed up

with Monsanto to disable Varroa mites' genes through RNA interference. By releasing "gene-silencing agents," "very target-specific," they hope to avoid the toxicity and sublethal effects caused by pesticides and miticides.

How does RNA interference (RNAi) work? It's "a natural phenomenon that is set off by double-stranded RNA. DNA, which is what genes are made of, is usually double stranded, the famous double helix. But RNA, which is a messenger in cells, usually consists of a single strand of chemical units representing the letters of the genetic code. So when a cell senses a double-stranded RNA, it acts as if it has encountered a virus. It activates a mechanism that silences any gene with a sequence corresponding to that in the double-stranded RNA. Scientists quickly learned that they could deactivate virtually any gene by synthesizing a snippet of double-stranded RNA with a matching sequence." Monsanto is seeking approval to use RNAi in corn to eradicate western crop rootworm.

However, some scientists are concerned that other, beneficial insects could be affected by eating the corn or "become exposed to the RNA in soil or water." This is what happened "when a double-stranded RNA intended to silence a rootworm gene also affected a gene in the ladybug, killing that beneficial insect." The National Honey Bee Advisory Board argues that "To attempt to use this technology at this current stage of understanding would be more naïve than our use of DDT in the 1950s." The EPA will meet in early February "to discuss the potential risks of RNA interference."

The *Times* reports that "Monsanto is also looking at putting RNA into sugar water fed to honeybees to protect them from the varroa mite. . . If the RNAi is directed at a genetic sequence unique to the mite, the bees would not be harmed by ingesting it, while the mites would be killed once they attacked the bees. One field trial showed that this technique could help protect bees from a virus. Monsanto acquired Beologics, a company developing the RNAi technology for bees." To read more, visit: <http://www.nytimes.com/2014/01/28/business/energy-environment/genetic-weapon-against-insects-raises-hope-and-fear-in-farming.html?emc=eta1>.



Monsanto is also exploring RNA interference to kill rootworm damaging corn (photo, Michael E. Gray, U. Illinois)

“Bee Deaths May Stem From Virus, Study Says” [21 Jan 2014, *The New York Times*]

Much as influenza has jumped to people from chickens or pigs, USDA researchers have found evidence that the tobacco ringspot virus has jumped to honey bees via soy plants. Infection by this virus is correlated with fall through winter bee die-offs, as the virus attacks the bees’ nervous systems: “the share of bees infected with the virus rose to 22.5 percent in winter from 7 percent in the spring.” Bees are exposed to the virus via pollen; the virus is then spread to larvae via bee bread. Varroa mites, too, may play a role, spreading the virus by infesting larvae.

Tobacco ringspot virus – an RNA virus – is the first virus known to have made the leap from pollen to bees. Its “rapid mutation rate also allows RNA viruses to switch hosts more rapidly than conventional pathogens, with the tobacco virus jumping to bees,” as avian flu has moved from chickens to humans. Since “about 1 in 20 plant viruses is found in pollen, . . . pollen should be monitored as a potentially significant source of host-jumping infections,” according to the Beltsville, Maryland research group.

Bee Culture’s ezine reports further details: that bees may spread the virus from flower to flower as they forage, thus exposing other pollinators, and thoughts about how Varroa mites resist tobacco ringspot virus. To read more, visit: http://www.nytimes.com/2014/01/22/us/bee-deaths-may-stem-from-virus-study-says.html?emc=eta1&_r=0 and <http://home.ezezine.com/1636/1636-2014.01.22.08.22.archive.html> .

“The Weaker Sex: Male Honey Bees More Susceptible Than Females to Widespread Intestinal Parasite” [18 Jan 2014, *Science Daily*]

We knew it was rough being a drone. Now Swiss researchers have discovered that drones are “much more susceptible” to *Nosema* than workers. The “delicate nature of male honey bees” is owed partly to their haploid nature: with only one set of chromosomes, scientists hypothesize that they are more predisposed to disease because they can’t “mask mutated genes” on a matching chromosome copy, as females can. (*Below, workers & drone, Geoffrey Williams, University of Bern*)



The new finding may suggest a reason for the spike in queen failure that many beekeepers have observed. The researchers note that “Without strong, fit drones, the chance of successful matings with queens could be severely compromised,” in turn compromising colony health through queens’ failing to obtain “sufficient quantity and quality of sperm from drones during mating.” To read more, visit:

http://www.sciencedaily.com/releases/2014/01/140118122503.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily+%28Latest+Science+News+--+ScienceDaily%29.

“The label that was meant to please everyone, but still kills bees: the “exceptions” allow for honey bees and native pollinators to now be legally killed” [03 Jan 2014, *Pollinator Stewardship Council*]

The EPA has unveiled its new neonicotinoid label, but ambiguities and exceptions leave many wondering how effectively it will protect bees. The neonics labeled will be imidacloprid, clothianidin, thiamethoxam, dinotefuran, acetamiprid, and thiacloprid. The EPA plans, however, to “harmonize” the label’s language “across all chemistries.”



Above left, EPA’s new neonicotinoid warning label’s bee image; at right, Pollinator Stewardship Council’s visual commentary

The Pollinator Stewardship Council charges that the label’s bee image (see above) could just as easily be taken to imply that a product is “bee safe” as “bee dangerous.” PSC criticizes EPA’s five exceptions to the “do not apply” restriction: first, “the application is made to the target site after sunset”; second, “the application is made to the target site when temperatures are below 55 degrees Fahrenheit”; third, “the application is made in accordance with a government-initiated public health response”; fourth, “the application is made in accordance with an active state-

administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying”; and fifth, “the application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48 hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.”

Among concerns that PSC raises are: what constitutes “every effort” to “notify beekeepers”? Can bees feasibly be moved? What happens to native pollinators? Does the label imply that cumulative, sublethal effects will not occur?

PSC states: “The new pesticide label language allows for honeybees and native pollinators to be legally killed. The “mandatory language” in the new label can be ignored if one of the five conditions is met. It is critical that beekeepers understand the new pesticide label language. . . . EPA registrations run on a 15-plus year cycle, and historically EPA will not make substantive changes during that time.” Further, PSC asks: “Can your bees suffer more exposure to bee toxic pesticides for another 15 years? Let us work for you. Help us protect your bees.” To read more, visit: <http://us6.campaign-archive1.com/?u=8314a260d85f4354c1ed1a0df&id=d4f5f64ffa&e=eda990b06a>.

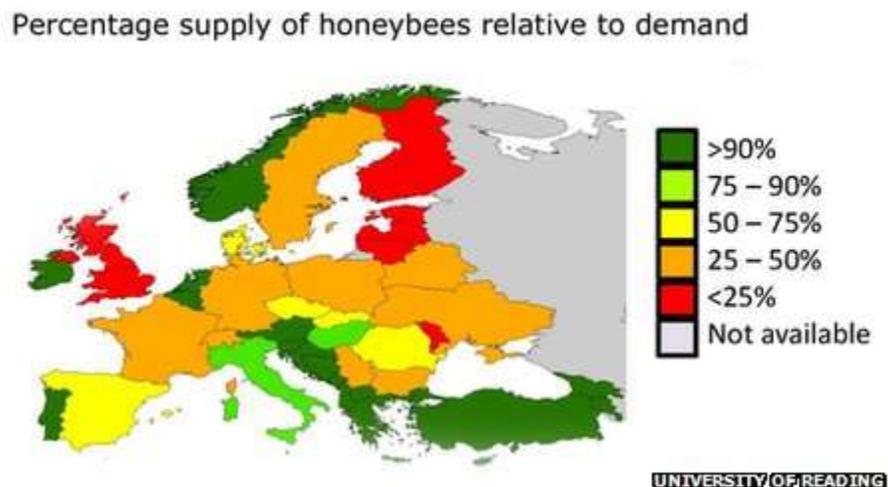
“Exposure to Pesticides Results in Smaller Worker Bees [among bumblebees]” [19 Jan 2014, *American Bee Journal E-zine*]

University of London researchers have found that bumblebees “exposed to pyrethroid pesticides for four months or more . . . hatch out at a smaller size,” and do not catch up as they grow. Smaller size translates to less effective pollen and nectar collection, threatening colony health. Further studies will be needed to show whether honey bees may be similarly affected. ABJ reports that “Pyrethroid pesticides, derived from the chrysanthemum, are touted as relatively “natural,” but have proven highly toxic to beneficial as well as pest insects.” To read more, visit: <http://us1.campaign-archive1.com/?u=5fd2b1aa990e63193af2a573d&id=a27a7ca018&e=e9ff21e0bb>.

Honey Bee Losses Are Affecting Pollination and Honey Harvests Worldwide: a series of articles published in January shows the impact of honey bee losses on agriculture and honey harvests. Read on:

“Honey Bee Shortage Threatens Crop Pollination in Europe,” [8 January 2014 BBC News]: More than half of EU nations lack sufficient honey bees for 2014 crop pollination. Wild pollinators like hoverflies and bumblebees may help: however, they, too, are in decline, while Britain “only has 25% of the honey bees it needs.” In the EU, honey bee colony numbers

actually rose by 7% from 2005 to 2010, in part due to a “boom” in biofuel production and resulting need for more pollination of “feed crops like oilseed rape, sunflowers and soybeans” and concerted efforts to breed bee packages against the backdrop of colony collapse disorder. Despite this, according to *PLoS One*, “the deficit across Europe now amounts to 13.4 million colonies or around seven billion honeybees,” raising concerns that protection of not only managed honey bees, but wild bees – “the unsung heroes of the countryside . . . doing work for free” – is urgently needed. To read more, visit: <http://www.bbc.co.uk/news/science-environment-25656283> and <http://www.treehugger.com/sustainable-agriculture/europe-doesnt-have-enough-honeybees-pollinate-its-crops.html>.



Australian Honeybees Unable to Make Honey [26 Jan 2014, *Huffington Post*]

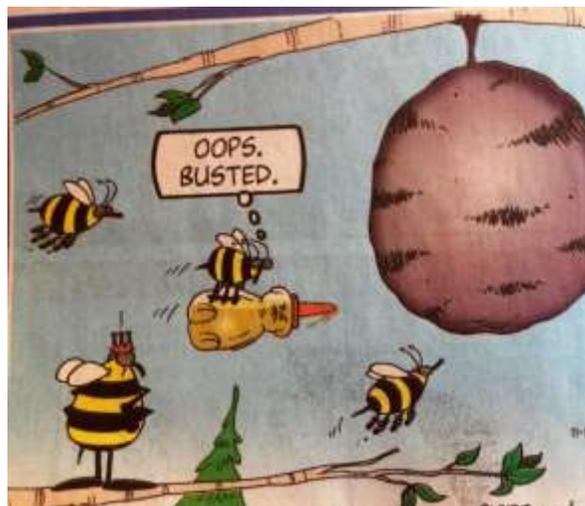
Amid intense heat waves, Australia's record hottest spring has made plants produce fewer flowers and less nectar, leading to food shortages for honey bees – meanwhile, beeswax in hives “is now melting because daytime temperatures regularly exceed 95 degrees F.” The Aussie bees have been forced to forage “exclusively for fresh water to cool down their hives.” Australian beekeepers have been to feed their bees in summer: “searing” spring temperatures render pollen sterile in plants like kiwis, cherries, plums, and almonds.” Sterile pollen lacks protein, needed “for building young bee brains and ensuring strong autoimmune systems.”

2013’s drought and heat waves led to the “worst honey season in 50 years of continuous record keeping” in Australia; expectations are that “Australia’s 2014 honey production will be halved.” “Aussie honeybees generate about \$6B per annum for the 12th largest economy on the globe including pollinating almost 70 percent of food crops, cotton for clothing, over \$150M in honey sales and potent medicines used in apis therapy for pain relief of rheumatoid arthritis, fibromyalgia.” To read more, visit: http://www.huffingtonpost.com/dr-reese-halter/australian-honeybees-unable-to-make-honey_b_4670475.html .

International Honey Market Woes [23 Jan 2014, *American Bee Journal*]: A comprehensive overview of the international honey market has been published, based on information from the American Honey Producers' Association and American Beekeeping Federation. The study notes that U.S. honey production “has become more costly, unpredictable and subject to factors leading to bee disease and bee loss, [and that] the dynamics of the American honey market cannot be understood in abstraction from the international honey market.” The online study supplements the “broad perspective” offered in the January 2014 issue of *ABJ*. Those interested in what’s happening to honey production in Argentina, Brazil, Vietnam, India, Canada, and the U.S. will want to read the details, a fascinating blend of smuggling, labeling fraud, money laundering, mono-diet challenges, bee shortages, and intrigue worthy of a Tom Clancy novel. . . . except that this is real.

According to the study, “World honey production in 2011 was about 3.6 billion pounds, with about 1.6 billion pounds produced in Asia. Asia is the only world region reporting significant increases in honey production since the year 2001, when Asia produced 1 billion pounds.”

Meanwhile, at the ABF conference, Dr. Dennis vanEngelsdorp (University of Maryland – Entomology) summed up bee challenges as “the 3 Ps, that is, Parasites, Pesticides and Poor feeding.” To read more, visit: <http://us1.campaign-archive2.com/?u=5fd2b1aa990e63193af2a573d&id=c97c89b24f&e=e9ff21e0bb> .



Common Crop Pesticides Kill Honey Bee Larvae in the Hive [28 Jan 2014, *American Bee Journal*]

Four common pesticides have been found to kill not only fungi and pests, but honey bee larvae fed bee bread made from tainted pollen. Not only that, in combination, these pesticides have

potent interactions that harm bees further. The Penn State and University of Florida study named “fluvalinate, coumaphos, chlorothalonil and chlorpyrifos, as well as “N-methyl-2-pyrrolidone (NMP) -- an inert, or inactive, chemical commonly used as a pesticide additive [which] is highly toxic to honeybee larvae.”

Chris Mullin, Penn State professor of entomology, said, "Our findings suggest that the common pesticides chlorothalonil, fluvalinate, coumaphos and chlorpyrifos, individually or in mixtures, have statistically significant impacts on honeybee larval survivorship," adding, "This is the first study to report serious toxic effects on developing honeybee larvae of dietary pesticides at concentrations that currently occur in hives." The team also found that increasing amounts of NMP corresponded to increased larval mortality, even at the lowest concentration tested.

Mullin noted, "Chronic exposure to pesticides during the early life stage of honey bees may contribute to their inadequate nutrition or direct poisoning with a resulting impact on the survival and development of the entire bee brood." Beekeepers who use fluvalinate or coumaphos to combat Varroa mites should be aware that these chemicals “persist within beehives for about five years.”

Jim Frazier, Penn State professor of entomology, noted that “Since pesticide safety is judged almost entirely on adult honey bee sensitivity to individual pesticides and also does not consider mixtures of pesticides, the risk assessment process that the Environmental Protection Agency uses should be changed" in light of these newly uncovered lethal interactions.

To read more, visit: <http://us1.campaign-archive2.com/?u=5fd2b1aa990e63193af2a573d&id=9e0cedc39f&e=e9ff21e0bb> . Bee Culture’s “Catch the Buzz” e-zine has additional details: visit <http://home.ezezine.com/1636/1636-2014.01.28.08.18.archive.html> .

ANNOUNCEMENTS & HELP WANTED

February Western Apicultural Society Newsletter: Visit http://groups.ucanr.org/WAS/WAS_Journal and click on the line in the paragraph on the right as directed. If you’re still getting the old issue, click on "empty cache" in your browser or "refresh" or "reload" under VIEW in your menu bar.

February WSBA Newsletter: Pick up your copy from www.wasba.org: click on "Newsletters" under OUR SPONSORS on the lower right of the page. Then click "Current issue."

That’s all for this month - take care, & bee happy!

~~ Susanne Weil, LCBA Secretary (Susanne.beekeeper@gmail.com; 360 880 8130)