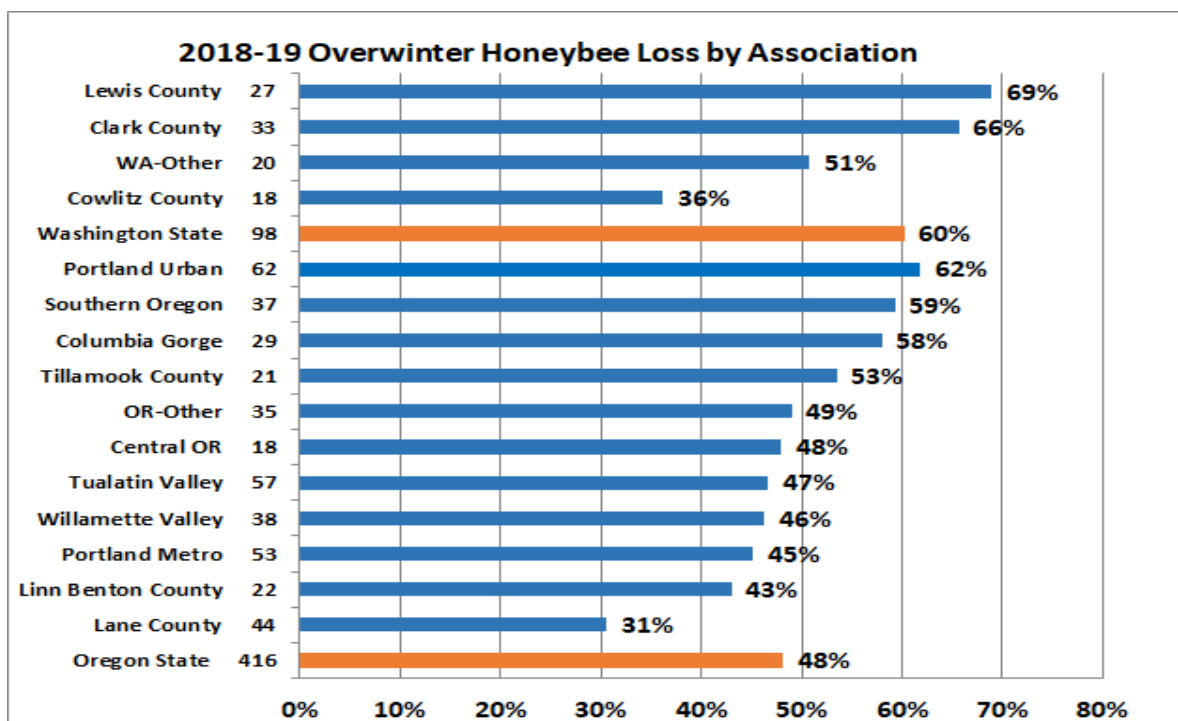


2018-19 Coastal OR Beekeeper Winter Loss by Dewey M. Caron

OR beekeepers were directed to a web-based survey document in a continuing effort to define overwintering losses/successes. This was the 10th year of such survey activity. I received 416 responses from Oregon backyarders and 98 from Washington beekeepers keeping anywhere from 1 to 38 OR/40 WA colonies. Ten Central Coastal, 3 Coos County and 4 South Coast beekeeper Association members completed a survey.

Surveys were received from members of 16 local Oregon (OR) associations and 7 Washington associations. The majority of the respondents (72%) keep bees in the I 5 corridor, Eugene, OR to Tacoma WA. Figure 1 shows number of responses and club loss rate for Oregon/Washington clubs providing 18 or more returns. OR-other includes 11 Columbia County, 10 Central Coastal, 7 Douglas County, 4 South Coast, 3 Coos County and a single return from Klamath County. A club report for the 20 Tillamook beekeepers has been posted; the 10 Central Coastal beekeeper responses were summarized for members at their July meeting.



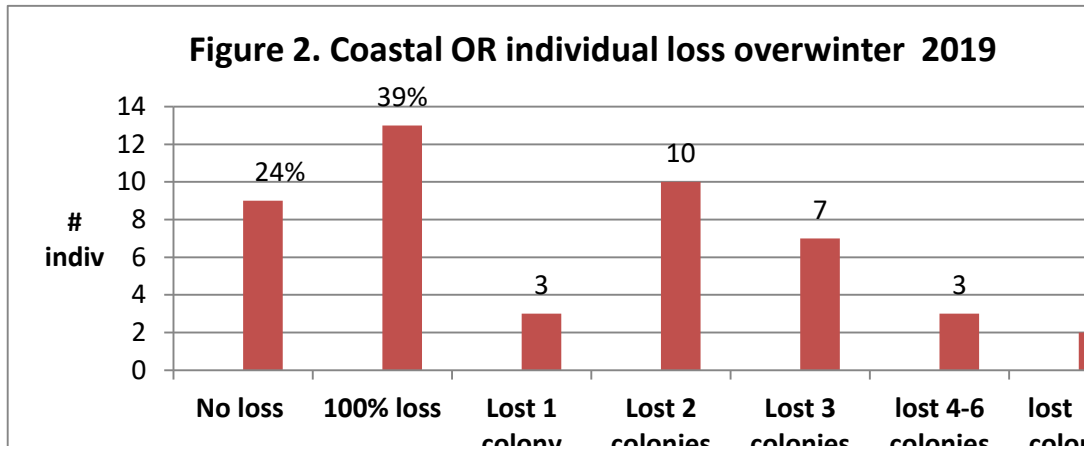
Overwintering losses of 20 Tillamook Beekeepers was 53% (82 fall colonies) 10 Central Coastal beekeeper respondents was 34% (65 fall colonies), 81% for the 3 Coos County respondents (32 fall colonies) and 62.5% for the 4 South Coast beekeepers (16 fall colonies). Overall state loss was 48%, the highest level in 10 years of PNW survey activity, which ties the same high loss level of 2016-17 overwinter. Graph below shows loss percentage with the number of fall colonies in (). Tillamook had no TopBar, Warre or other hives reported; there were no 8 frame Langstroth hives reported for Coos or South Coast.

| Location (# returns) | Overall lost (fall #) | 8 frame Lang (fall #) | 10 frame Lang (fall #) | Nucs (Fall #) | Top Bar hives (Fall #) | Warre Hives (Fall #) | Other (Fall #) |
|-------------------------|-----------------------------|--------------------------------|---------------------------------|------------------|------------------------------|----------------------------|-------------------|
| Tillamook (20) | 53% (82) | 56% (9) | 53% (87) | 100% (2) | 0% (1) | 0% (1) | 100% (1) |
| Central Coastal (10) | 34% | 33% (9) | 35% (55) | 0% (1) | | | |
| Coos Co (3) | 81% | | 89% (56) | 0% (2) | 50% (2) | | 0% (2) |
| South Coast (4) | 62.5% | | 33% (9) | 100% (2) | 100% (2) | 0% (2) | 0% (1) |

The survey also asked for hive loss by hive origination. As statewide, overwintered colonies had the lowest loss levels. Tillamook reported 23 of 39 overwintered colonies survived, central coast reported 22 of 28 overwintered colonies survived, Coos had 0 of 6 survive and Central coast south coast had 1 of 4 survive. Tillamook had 8 of 17 packages survive, Central Coast had 7 of 13 survive, Coos Co had no packages survive (of 6 reported) and South Coast had 1 of 3 survive. Tillamook reported 6 of 16 nucs surviving, Central coast had 2 of 7 survive; Coos and South Coast reported none used. For swarms, Tillamook reported only 3 of 12 surviving to spring, Central coast reported 16 of 18 surviving, for South coast neither of 2 swarm captures survived and Coos had only 2 of 11 survive. Tillamook reported 5 of 20 splits survived, Central coast had 8 of 9 splits survive, South Coast had 1 of 3 survive and Coos did not report splits.

The coastal survey respondents were a mixture of new beekeepers with a few colonies and more experienced individuals. In Tillamook 57% of respondents had 1, 2 or 3 colonies and 3 had 10+ colonies. Likewise 50% of Central Coast beekeepers had 1, 2 or 3 colonies and 20% had 10+ colonies. In Coos one individual had 2 colonies and 50% of south Coast beekeepers had 2 or 3 colonies. One individual of the 2 more southerly groups had 10+ colonies. In years experience, In Tillamook 13 individuals (62%) had 1, 2 or 3 year of experience, in Central coast 50% had 1, 2 or 3 years experience and 50% of south coast likewise but the fewest years experience in Coos was 4 years. In Tillamook one individual had 10+ years experience, 50% did in Central coast and one each in Coos and South coast had 10 or more years experience

Not everyone had loss. Five Tillamook respondents had NO LOSS (24%) but seven had total loss (33%). In Central coast, 3 individuals (30%) had no loss while 2 had total loss. For Coos all losses were above 75% (2 had total loss) and for South coast one individual had no loss and 2 had total loss. Heaviest individual loss was 2 colonies (10 individuals); 2 individuals lost 10 or more colonies. See data for all 4 coastal groups in Figure 2.



Reasons for Colony Loss/Acceptable loss

We asked of individuals that had colony loss to estimate what the likely reason(s) might have been, Multiple responses were permitted. Varroa mites (21= 57%) and weak in fall (18=49%) were most chosen, followed by queen failure (14=38%) and poor wintering (11=30%). Nine total said don't know. Comparison of Coast groups with statewide in table below.

| | Varroa mites | Poor wintering conditions | Weak in fall | Queen failure | Starvation | pesticides | Yellow jackets | Other |
|------------------|---------------|---------------------------|--------------|---------------|------------|------------|----------------|------------|
| Tillamook # % | 14 (47.5%) | 7 (23%) | 15 (50%) | 8 (27%) | 4 (13%) | 2 (7%) | 4 (13%) | 3 (10%) |
| Central Coast | 5 (50%) | 2 (20%) | 1 | 4 (40%) | 1 | | 1 | 3 (30%) |
| Coos Co | | 1 | 1 | 1 | | 1 | | 1 |
| South Coast | 2 | 1 | 1 | 1 | | | | 1 (25%) |
| Statewide % | 39% | 16% | 24.5% | 30% | 9% | 7% | 11% | 23% |

Why do colonies die?

There is no single reason for loss and a good deal of variation in opinion as to what might be an acceptable loss level. We are dealing with living animals which are constantly exposed to many different challenges, both in the natural environment and the beekeeper's apiary. We don't know what influence our winter weather could have been a factor in heavier losses. The four major factors affecting losses are thought to be mites, pesticides, declining nutritional adequacy of the environment and diseases, especially viruses. Management, either failure to do something or doing things incorrectly, remains a factor in overwinter losses. What effects alteration to the bee's natural environment and other external factors play in colony losses are not at all clear.

Langstroth wrote about the importance of taking losses in fall management saying if the beekeeper neglects such attention to his/her colonies 45% loss levels may occur, depending upon variable environmental conditions. It seems the "normal" of backyard losses is 30-50%. Older, more experienced beekeepers recall when loss levels were 15% or less. Honey production fluctuates each year but, once again, it seems to be declining on average. Despite continuing heavy annual losses numbers of U.S. bee colonies have increased somewhat since the 1970s; worldwide numbers of bee colonies have been steadily increasing.

There is no simple answer to explain the levels of current losses nor is it possible to demonstrate that they are necessarily excessive for all the issues facing honey bees in the current environment. Varroa mites and the viruses they transmit are considered a major factor colonies are not as healthy as they should be.

Management selections and losses

We asked in the survey for information about some managements practiced by respondents. Multiple responses were accepted. The survey inquired about feeding practices, wintering preparations, sanitation measures utilized, screen bottom board usage, mite monitoring, both non-chemical and chemical mite control techniques and queens. Respondents could select options and there was always a none and other selection possible. This analysis seeks to compare responses of this past season to previous survey years.

Most Oregon beekeepers do not perform just one management to their colony (ies) toward improving colony health and overwintering success. This analysis however is mainly of a single factor equated with loss level. Such analysis is correlative and doing a similar management as fellow beekeepers do does not necessarily mean you too will improve success.

Except for Tillamook, too few respondents renders analysis of little value. Please see the full analysis for Tillamook and statewide for managements that had more less loss and more survival. I did an analysis of the 10 Central coastal beekeepers comparing those who had not loss (3 individuals) with 3 individuals that had 100% or 67% loss to see if there was a pattern.

For the 3 individuals with Zero loss, 1 did no feeding, 2 fed pollen patty & sugar syrup and 1 fondant. For those 3 individual with heavy loss 2 fed pollen patty, all 3 reported feeding sugar syrup and 2 fed fondant. Obviously no pattern. Likewise for winterizing the 3 individuals with zero loss reported that 2 used rain shelter, 2 upper entrances and 2 Vivaldi Board moisture trap. For the 3 with heavy loss all three reported use of Vivaldi. Again no discernable pattern comparing the extremes of total loss with no loss.

When I examined the 2 extremes for use of chemical mite control, those with zero loss, reported 2 reported use of Formic MAQS, 3 did oxalic vaporization (and 1 also used oxalic spray on a package at installation and 1 used Apiguard. For the 3 with heavy loss 2 used Apivar, 2 used MAQS and 1 used oxalic vaporization (1 used Powder sugar). Again no discernable distinction that can be used to help explain why the 3 with no loss might have managed differently than those with heavy loss.

Closing comments

This survey is designed to ‘ground truth’ the larger, national Bee Informed loss survey. Some similar information is additionally available on the BeeInformed website www.beeinformed.org and individuals are encouraged to examine that data base as well. Recall that the BeeInformed survey is measuring the larger scale OR beekeepers not the backyarders (figure 6 of OR state loss report.) Reports for individual bee groups are customized and posted to the PNW website.

We intend to continue to refine this instrument each season and hope you will join in response next April. If you would like a reminder when survey is open please email us at info@pnwhoneybeesurvey.com with “REMINDER” in the subject line. We have a blog on the pnwhoneybeesurvey.com and will respond to any questions or concerns you might have.

Thank You to all who participated. If you find any of this information of value please consider adding your voice to the survey in a subsequent season. Dewey Caron June 2019