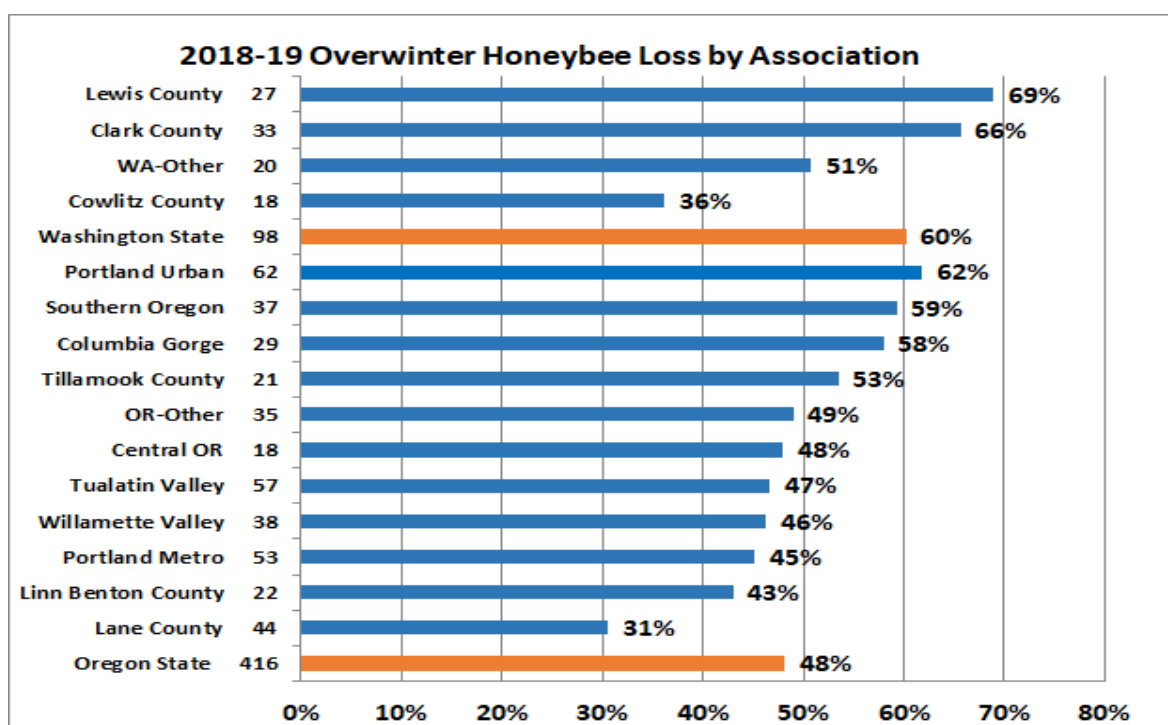


Washington backyard beekeeper Winter Losses 2018-19 Dewey Caron

Part 1

Ninety eight Washington beekeepers (6 fewer than last year) supplied information on winter losses and several managements related to bee health with an electronic honey bee survey instrument www.pnwhoneybeesurvey.com. Overwintering losses of small scale Washington beekeepers were once again elevated.

Figure 1 shows total OR and WA response by local association. Statewide loss level is highlighted. Number individuals () to left of association name is number of respondents, bar length is % overwinter losses by club. Total fall colony response was 416 OR and 98 WA individuals; survey included 551 WA fall colonies.



The WA respondents to the electronic survey managed up to 40 fall colonies. Fourteen individuals had 1 colony, 25 respondents had 2 colonies (the greatest number) and 16 individuals had 3 colonies (=55 individuals, 56% of total respondents had 1, 2 or 3 colonies), 21 individuals had 4 to 6 colonies, 4 had 7-9 colonies and 18 individuals had 10+ colonies. When loss levels were computed the 1-3 colony owners had a 63% loss, the 4-6 colony owners had 49% loss level and the 10+ individuals had 60% loss of colonies in 2018-19 overwintering period.

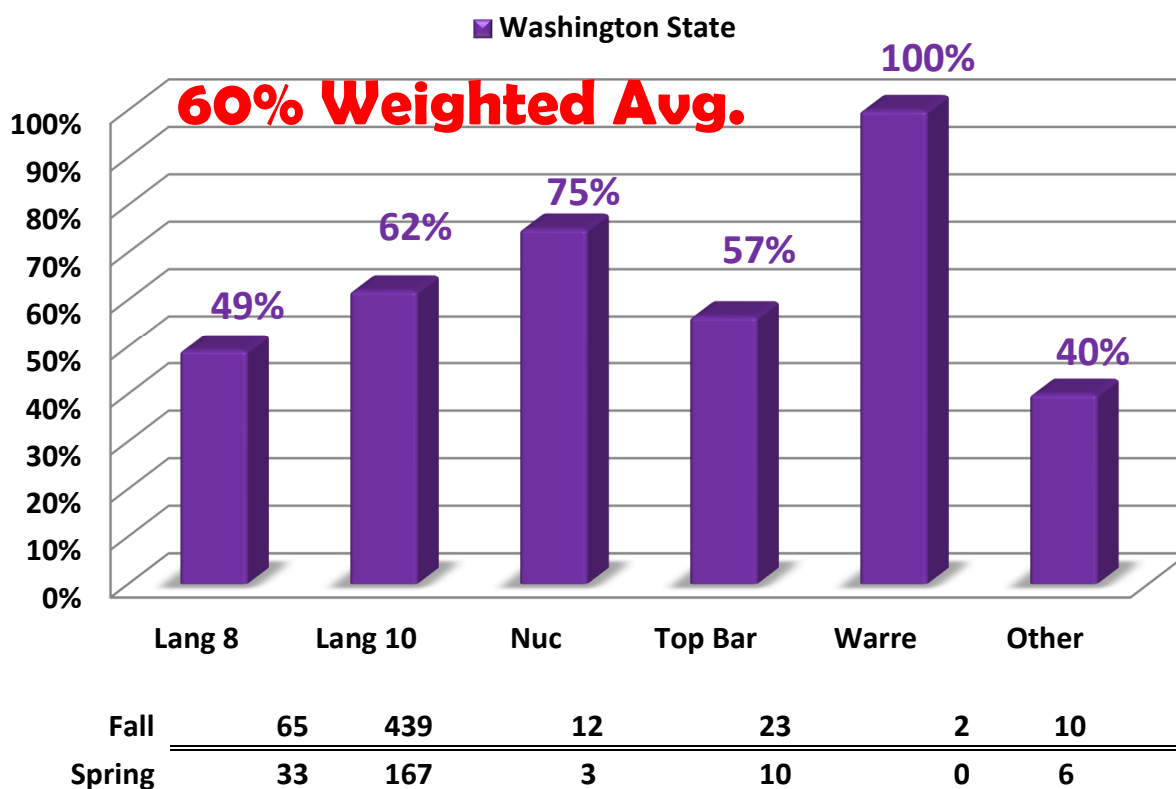
Thirty eight WA individuals (39% of respondents) had 1 or 2 years of experience; 32 individuals had 33% had 4 – 6 years' experience (medium number = 4), 12 individuals had 7-9 years experience and 16 had 10+ years with 39 the greatest. When loss level was correlated the individuals with 1-3 years experience had 62% loss level, the 4-6 years experience group had 61% loss and the 10+ years experience group had a 71% loss.

Seventy one (73%) of WA beekeepers had an experienced beekeeper mentor available as they were learning beekeeping. This percentage was up from 62% the previous year.

Total WA backyard beekeeper overwinter loss = 60% loss.

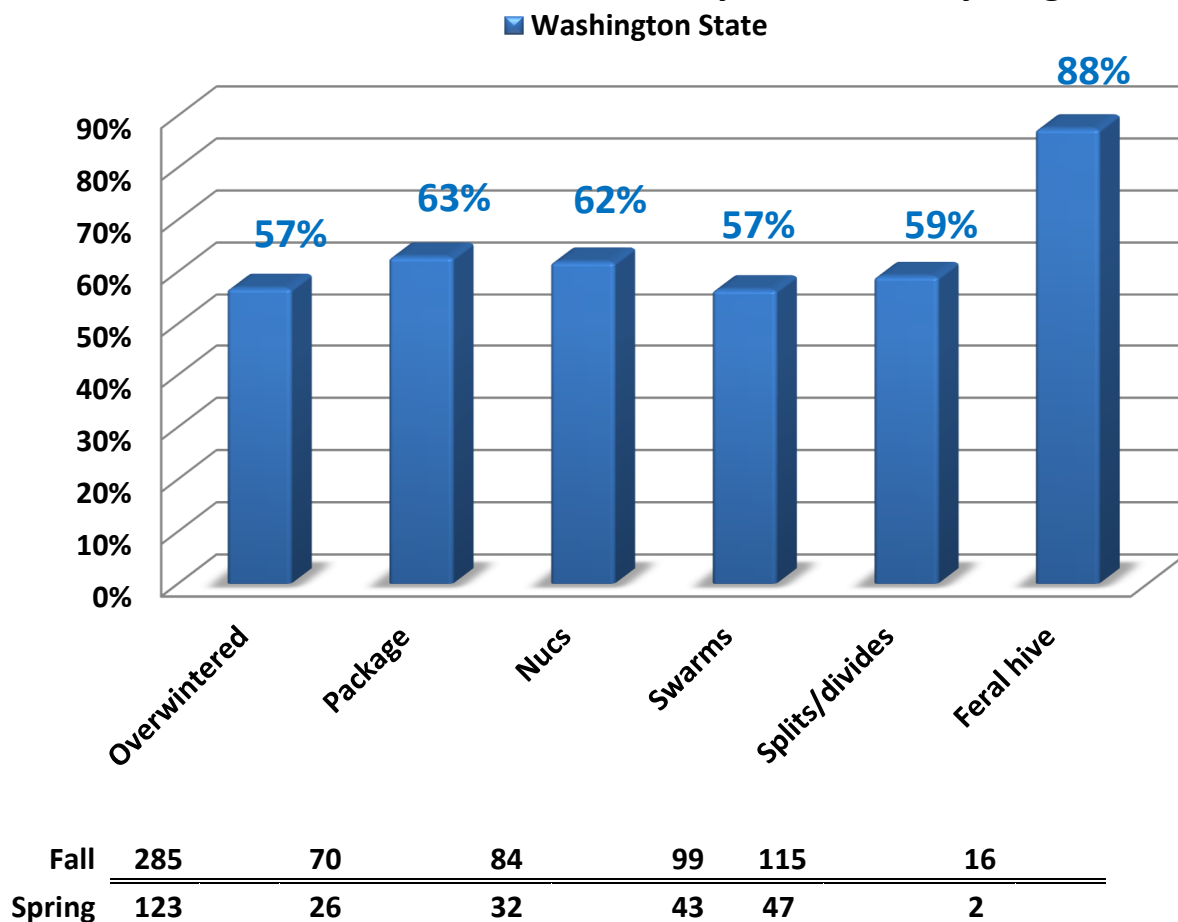
The WA survey overwintering loss statistic was developed by our asking number of fall colonies and surviving number in the spring by hive type. Results, shown in Figure 2 bar graph, illustrates overwintering losses of 98 total WA beekeeper respondents. Langstroth 8 and 10 frame beehives plus nucs (94% of total) had heavier average losses (61%) than the alternative (Top bar, Warré and other) hives (54%).

Figure 2 2018-19 Winter Honeybee Loss % by Hive Type



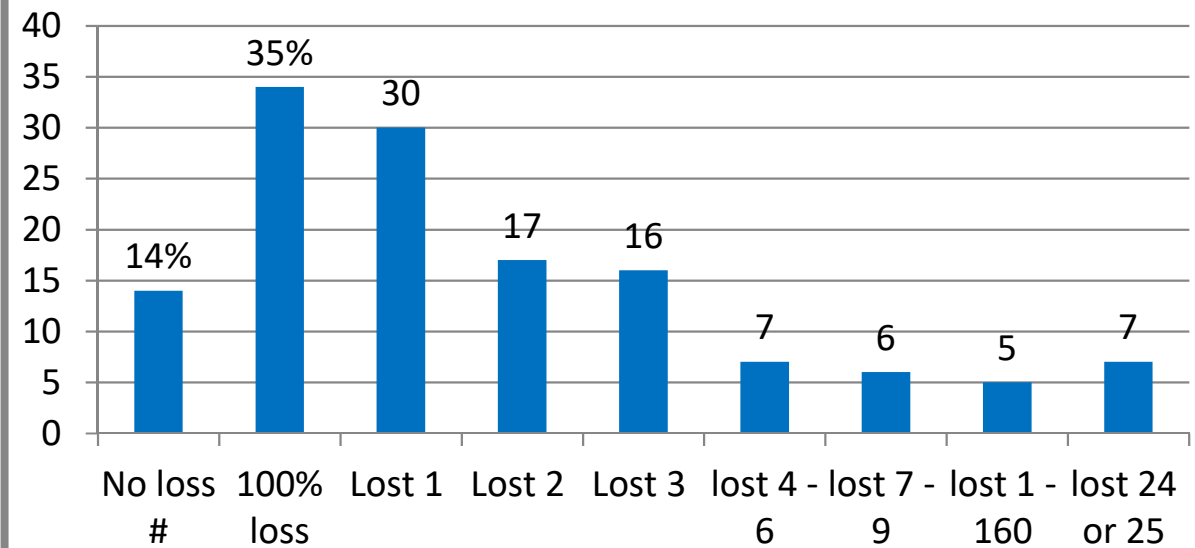
Origination: We also asked about hive loss by origination. Data shown in Figure 3. All but feral hive transfers had similar loss level.

Figure 3 2018-19 Winter Honeybee Loss % by Origination



Among 98 WA beekeepers 15 individuals (15%) maintained more than one hive type. For the total WA beekeepers, 14 (14%) had no loss and 34 individuals (35%) had total loss. Thirty WA individuals lost 1 colony, 17 individuals lost 2 colonies and 16 individuals lost 3 colonies (75% of individuals with losses). Eight (8) individuals lost 12 or more colonies; highest loss was 25 colonies. Data in Figure 4.

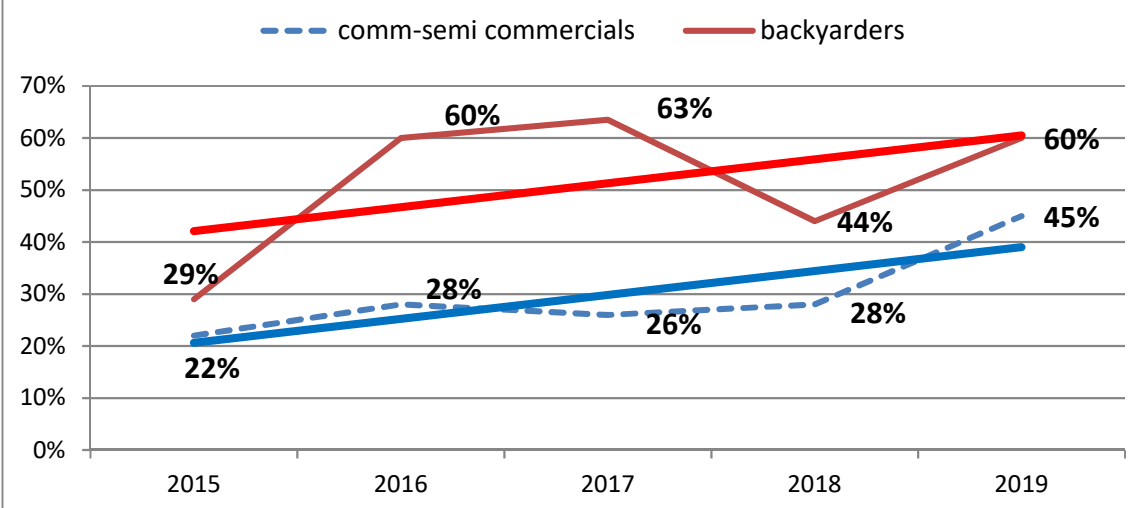
Figure 4. 2019 WA Hive losses



Comparison of backyarders and commercial/semi-commercial beekeepers

A different (paper) survey instrument was mailed to Pacific Northwest (PNW) semi-commercial (50-500 colonies) and commercial beekeepers (500+) asking about their overwintering losses. Comparison is shown in Figure 5 below with approximate number of colonies represented by the commercial/semi-commercial beekeepers and number of individual backyarder survey respondents. Also shown is the trend line of losses of both groups.

Figure 5. Comparison of WA Commercial losses with backyard beekeeper losses, 5 years 2015-19



Backyard losses have consistently been higher, in some years double the losses of larger-scale beekeepers. The reasons for this dichotomy are complex. Commercial and semi-commercial beekeepers examine colonies more frequently and they examine them first thing in the spring as they take virtually all of their colonies to Almonds in February. They also are more likely to take losses in the fall and are more pro-active in varroa mite control management.

Self-reported “reasons” for colony losses: We asked survey takers who had winter losses for the “reason” for their losses. More than one selection could be chosen. In all there were 188 WA selections (1.9/individual) provided. Weak in the fall (21 individual choices), Varroa mites (each 15%), poor wintering conditions (25 choices) and yellow jackets, both 13% were most common choices. The table shows number and % of selections.

I don't know	13	7%
CCD	13	7%
Nosema Disease	4	2%
Pesticides	3	2%
Poor wintering Condition	25	13%
Small Hive Beetles	1	1%
Starvation	19	10%
Queen Failure	20	11%
Varroa Mites	29	15%
Weak in the Fall	28	15%
Yellow Jackets	25	13%
I have no opinion	0	0%
Other	8	4%

There is no easy way to verify reason(s) for colony loss. Colonies in the same apiary may die for different reasons. **Doing a dead colony examination (necropsy) is the first step in seeking to solve the continuing heavy loss problem. More attention to colony strength and checking stores to help avoid winter starvation will help reduce some of the losses. Control of varroa mites will also help reduce losses.**

Respondents were asked to select an acceptable loss level, being offered several categories to check. Twelve individuals said zero, while 7 said 5% and 10 indicated 10%, 20% was medium; 12 individuals (12.5% said 50% or more was an acceptable loss level.

IDK	None	5%	10%	15%	20%	25%	33%	50%	75%	100%
2	12	7	10	4	16	21	12	8	3	1

Why do colonies die? There appears to be no single reason for loss and a good deal of variance 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. Major factors are thought to be mites, pesticides, declining nutrition adequacy of

the environment and diseases, especially viruses and Nosema. Management, failure to do something or doing things incorrectly, remains a factor in our losses.

What effects our 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 winter 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 can be argued that losses of 30, 40, 50% or more might be the new "normal." Older, more experienced beekeepers recall when loss levels were 15% or less. Honey production fluctuates each year but, once again, seem to be declining on average. Numbers of U.S. bee colonies have declined since the 1940s, returning to numbers for 100 years ago, although numbers for the last 3 decades have not changed. Worldwide numbers of bee colonies are steadily increasing.

So there is no simple answer to explain the levels of current losses nor is it possible to demonstrate that they are excessive for all the issues facing honey bees in the current environment.

Part 2: 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. This requires further data crunching and analysis. Part 2 report will be posted as soon as available.

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