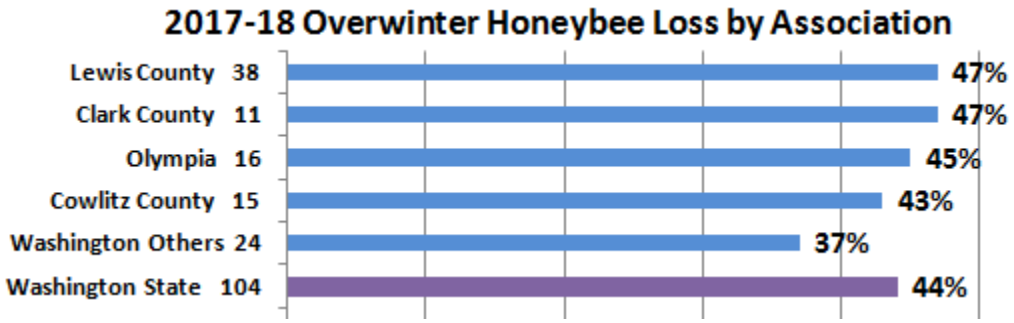
Olympic backyard beekeeper Losses 2017-18 Winter by Dewey Caron

Overwintering losses of small scale Washington beekeepers was down considerably from the previous loss level of 63%. One hundred four WA beekeepers supplied information on winter losses and several managements related to bee health with an electronic honey bee survey instrument www.pnwhoneybeesurvey.com. Figure 1 shows total WA response. Number in ( ) to left of association name is number of individuals; % is overwinter losses by club.



Thirty seven percent (37%) of WA respondents had 1 or 2 years of experience; 28% had 3 to 4 years' experience (medium number = 3). 10 individuals (12%) had 5 to 7 years, 10% had 7 to 10 years and 12% had 14+ years of experience, [40% above 30 years]; highest was 55. Of the last 7% (>12 year's experience), there was 17.5% average years of experience = 17 ½ years experience and = 6 colonies lost/individual] The 16 Olympia beekeepers had a somewhat similar distribution of experience and colony numbers. Six individuals had 1 year and 3 individuals had 2 years experience (60%), (Medium = 2), 3 individuals had 5 to 8 years experience and 3 individuals (20%) had 10 to 40 years experience. The 3 individuals with 10+ years experience had average 23 years experience [and none had colony loss].

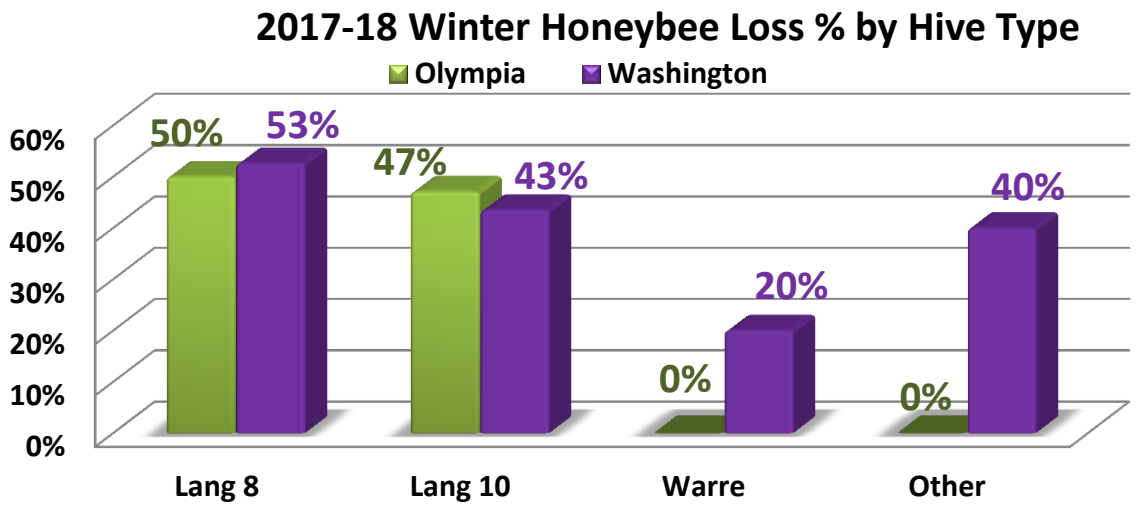
For fall colony numbers, 40.5% of WA beekeepers had 1 to 2 colonies, 26% had 3 or 4 colonies (medium was 3 colonies/individual), 19% had 5, 6 or 7 colonies, 8% had 8, 9 or 10 colonies and 7% had 12+ colonies; largest number was 35 colonies.. For Olympia 5 individuals had 1 colony, 5 had 2 colonies and 4 individuals had 3 to 6 colonies.

73% of WA beekeepers had an experienced mentor available as they were learning beekeeping, while 11 of 16 (69% of Olympia beekeepers said they had a mentor.

Total WA backyard beekeeper overwinter loss = 44% loss.

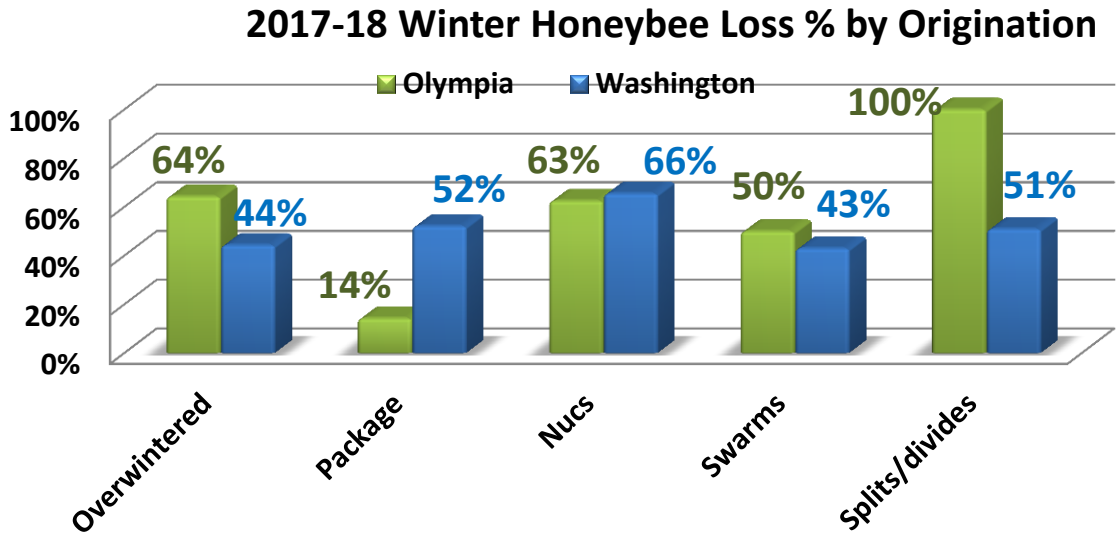
Olympic Loss rate = 45%

Winter loss was etermined by subtracting number spring colonies from fall colony number by hive type. Results, shown in Figure 3 graph below, compares Olympia with total WA beekeepers. Of 12 8 frame Langstroth hives, half did not survive, 8 of 17 Langstroth 10 frame colonies did not survive. Both a single Warré and other hive (not IDed to type) did survive.



fall col # (loss)	12(6)	17(8)	1(0)	1(0)

We also asked about survival of colony by hive origination. Nine of 14 overwintered colonies did not survive, 1 of 7 packages did not survive, 5 of 8 nucs perished, ½ the swarms (4 fall swarm hives) did not survive while the single split did survive. A single individual had more than one hive type.



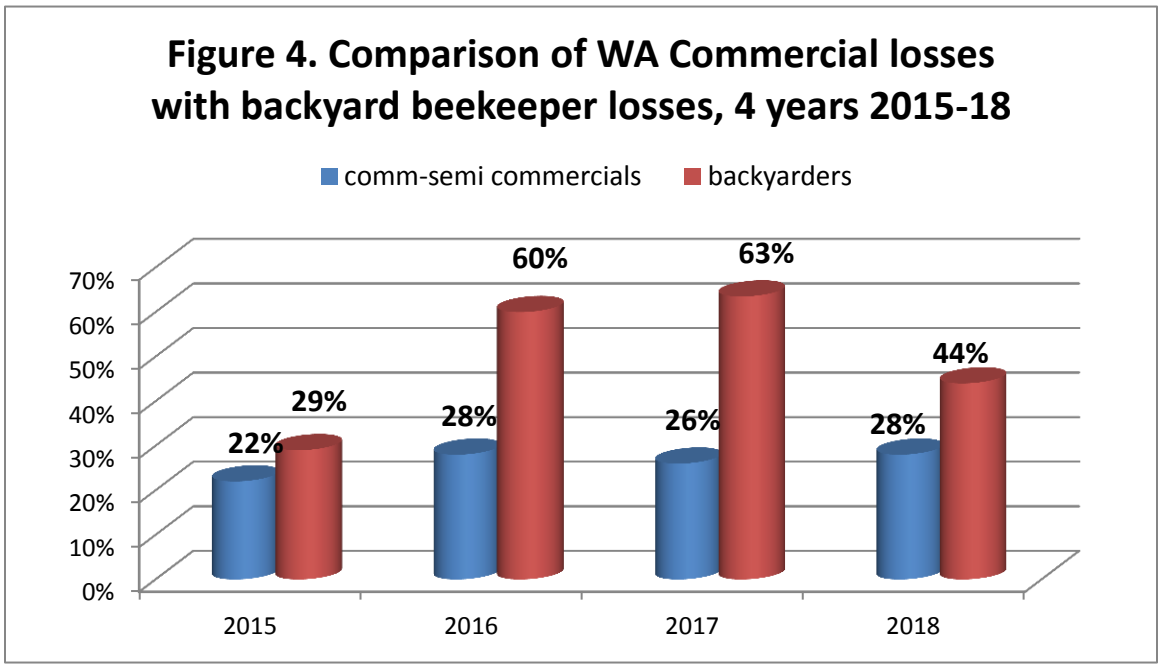
Fall Col # (loss)	14(9)	7(1)	8(5)	4(2)	1(1)

Not all individuals had losses. 7 individuals (47%) had no loss while 5 individuals had total loss. One colony was lost by 4 individuals and 2 by 2 individuals. Largest loss was 6 colonies, a total loss for this individual. One individual had 2 apiaries; loss level was the same at both apiary sites.

Comparison of backyarders and commercial/semi-commercial beekeepers

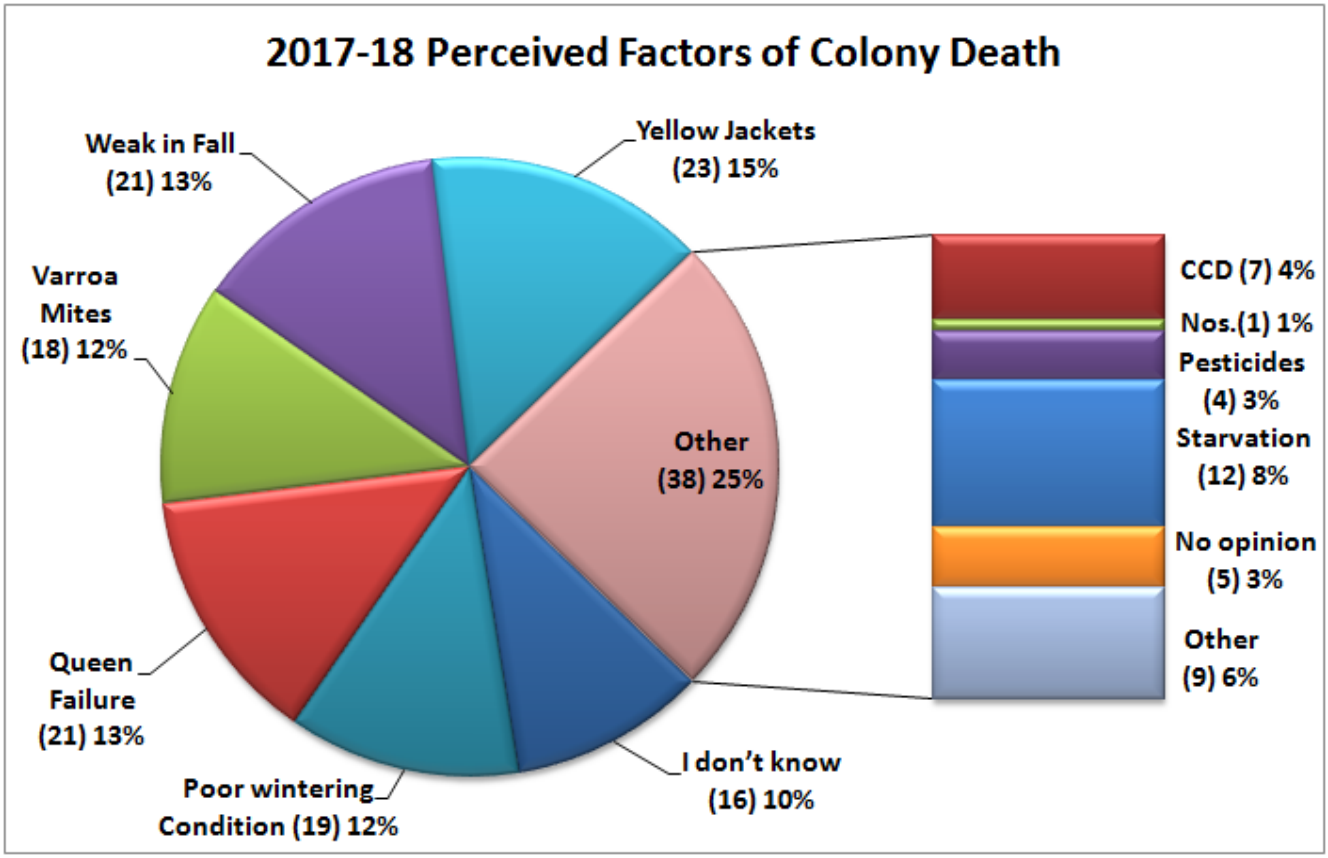
A different (paper) survey instrument was mailed to Pacific Northwest (PNW) semi-commercial (50-500 colonies) and commercial beekeepers (500+) asking about their overwintering losses. Comparison is shown in Figure 4 below with approximate number of colonies represented by the commercial/semi-commercial beekeepers and number of individual backyarder survey respondents.

Backyard losses have consistently been higher, most 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.



# Comm hives	~40,000	33,200	16,604	26,115
# backyarders	31	52	101	104

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 156 WA selections (1.5/individual) provided. Weak in the fall and queen failure (both 21 individual choices), poor wintering conditions (19 choices), and Varroa mites (18 individuals) were the major factors listed, closely followed by don't know (16 individuals). The side bar shows other selections. For Olympic beekeepers don't know, Starvation, queen failure and weak in the fall were each indicated by 2 individuals with varroa, poor wintering, and yellow jackets each were indicated by one individual.



There is no easy way to verify reason(s) for colony loss. Colonies in the same apiary may die for different reasons. **Doing the 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. Four individuals said zero, while 8 said 10% (25% for both responses), 19 said 25% (40%), 5 said 33% and 9 said 50% loss (19%) was acceptable. One individual each said 75% and 100% (4%).

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.

Pro-active Managements: Do you feed bee colonies in your care with sugar, honey or protein? Do you take extra measures for wintering preparation? Are we doing the sanitary practices we would in animal husbandry with our bees such as cleaning hive tools/frequently washing gloves (if used) between inspecting different hives or, when we find it necessary to take a frame from one colony to another do you check to confirm the donor colony is healthy?

Part 2 of the loss survey asks some basic questions to allow comparison of loss rates from beekeepers who may perform one management with those who don’t do that management or with the average loss level. This analysis takes longer to complete. It will be posted as soon as available.

****

THANK YOU. Bee counted-Bee informed! I hope you find this useful. Please consider participating in the PNW and/or the National BIP survey next April! Help make the Washington state report more robust with an even larger participant base next year