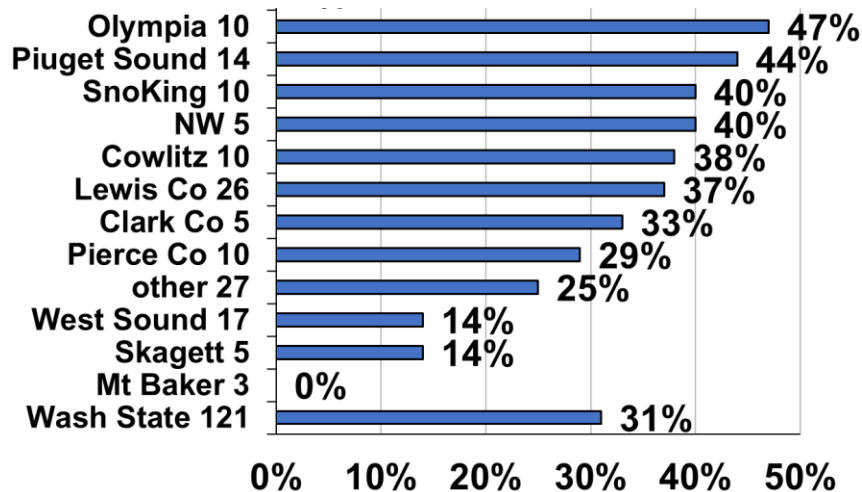


Winter Bee Losses of Lewis Co Backyard Beekeepers for 2023-2024

by Dewey M. Caron

Overwintering losses of small-scale Washington backyard beekeepers =31%, a decrease of five percentage points from last year, 14 percentage points below the 9-year loss average. One hundred twenty-one Washington respondents completed a survey, one more than last year and two above the 119 average respondent rate of last five years. Information gathered included winter losses and several managements related to bee health www.pnwhoneybeesurvey.com.

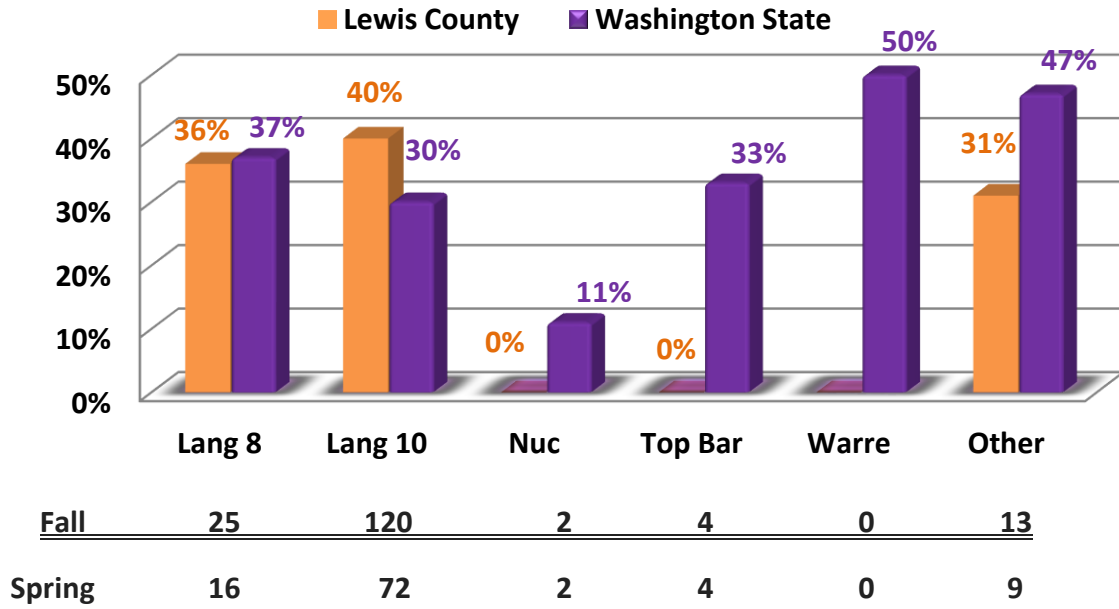


Response by local Washington (WA) association members varied as indicated by numbers adjacent to club name. Losses of those club individuals are shown in blue bars in Figure 1. Statewide loss level was 31%. Twenty-six Lewis Co beekeepers returning a survey had losses slightly higher of 37%. Survey included 693 fall Washington beekeeper colonies with 134 from Lewis Co.

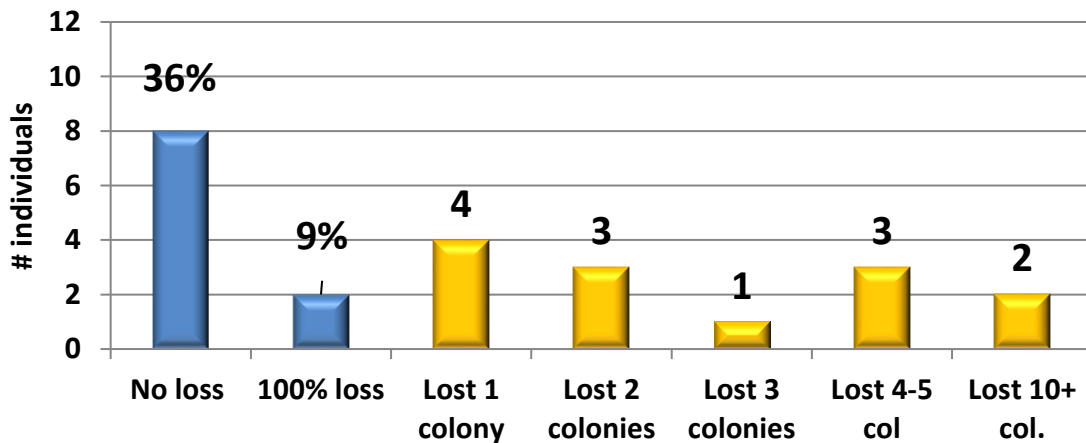
2023-2024 Overwinter Losses by Hive Type

The Lewis Co survey overwintering loss statistic was developed by subtracting number of spring surviving colonies from fall colony number supplied by respondents by hive type. Results, shown in Figure 2 bar graph, illustrate overwintering losses of 121 total WA beekeeper respondents and 26 Lewis Co members. Langstroth 8 frame beehives had lower average losses (36%) than Langstroth 10 frames hives (40%). Two of two nucs and 4 of 4 Top Bar hives survived. No Warrè hives were in survey responses. Thirteen other were identified; 3 of 4 AZ hives survived – the remainder were not identified.

Lewis Co and Washington loss by hive type 2023-24



Eight individuals (36%) had no loss (32 colonies); forty-six individuals statewide (38%) had no loss. Two LCBA individuals had total loss (17 colonies). Four individuals lost one colony, 3 lost two colonies, one lost 3 colonies, 2 lost 4 and 1 lost 5 colonies and 2 individuals lost 10 or more colonies (heaviest loss was 13 colonies). See graph 3. Individuals with 1 to 3 colonies (9 individuals) had 20% loss level, the 6 individuals with 4 to 6 colonies lost 13 of 30 colonies (43%), the 7 individuals with 7 to 9 colonies (56 total) lost 11 colonies (20% loss level) and those 4 individuals with 10+ colonies had 58 colonies with 26 alive in spring (57% loss level).



Eight Lewis Co respondents (31% of total) had 1, 2 or 3 years of experience; they had a 32 fall colonies, 23 survived winter (28% loss level), the 7 individuals 4 – 6 years’ experience (medium number = 5 years experience) had 59 fall colonies with 36 surviving, a 39% loss, 3 individuals had 7-9

years experience (loss level 47%), 6 had 10+ years keeping bees (maximum was 62) lost 10 of 32 fall colonies had a 31% loss level. Examining the relationship of colony numbers and years experience does not demonstrate the relationship of percentage loss of colonies decreases with a greater number of colonies and/or years of experience.

Eighty-eight (75%) WA beekeepers had an experienced beekeeping mentor available as they were learning beekeeping while LCBA respondents had 10 percentage points greater (85%) mentor availability, 5 percentage points greater than last 5-year average.

Survival Based on Hive Origination

We also asked about hive loss by origination. Data shown in Figure 4 below shows statewide response. Best survival was Splits/divides (15%) with swarms and previously overwintered both at 26% loss rate. Package bee losses were over 50% and nucs were 40%. LCBA survey respondents had 21.5% loss of Overwintered colonies. Swarm losses were 32%, splits 29.5%, packages, similar to statewide 46% loss and nucs 50%.

Comparison to Larger-Scale Beekeeper Losses

A different (paper) survey instrument was mailed to Pacific Northwest (PNW) semi-commercial (50-500 colonies) and commercial beekeepers (500+) from OSU asking about their

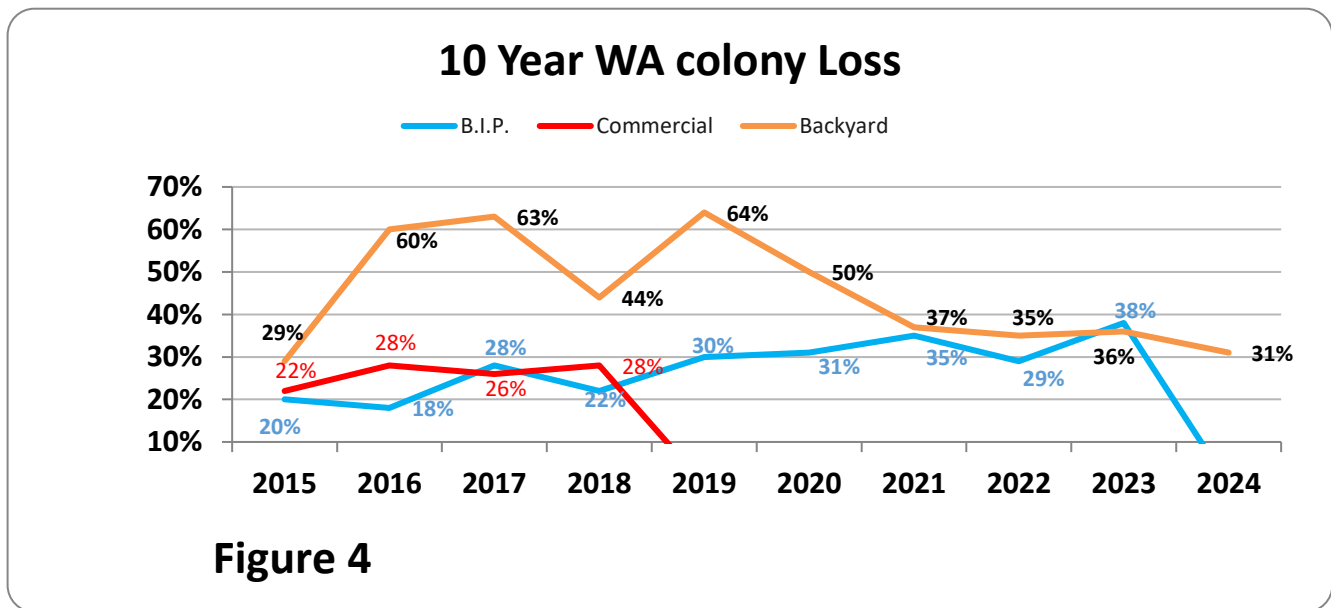


Figure 4

YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
#Comm hives	~40,000	33,200	16,604	29,015						
#backyarders	31	52	101	104	98	133	163	80	120	121
BIP (# hives)	113,237	32,184	83,000	52,500	48,600	48,000	33,300	72,700	50,145	0

overwintering losses. Response rate was reasonable until 2018 then the response was reduced to only three individuals and this was not considered representative of the larger scale beekeepers of Washington. Numbers are shown in **red** only for the 4 years 2015-2018 in Figure 4 above. The BeelInformed.org (BIP) losses for Washington beekeepers for 2015 to 2023, the last year of the BIP survey, are representative of the larger scale beekeepers and are shown in **blue** in Figure 4. Losses of backyard beekeepers from this survey are shown in **orange** line with black loss numbers. Average BIP loss (9 years) =27.9% and average WA backyarder loss (10 years) =44.7%. In 2023 the larger-scale beekeeper loss exceeded losses of backyarders, which was nearly also the case for Or commercials vs Oregon backyarders. The numbers included in survey are shown below the figure.

The reasons backyarders have had higher losses are several. Commercial and semi-commercial beekeepers examine colonies more frequently and they examine them first thing in the spring as they move virtually all their colonies to pollinate almonds in February. They also are more likely to take losses in the fall and are more pro-active in varroa mite control management. The winter of 2022-23 was a challenging one for large-scale beekeepers. We think mite resistance to the miticide amitraz was partly responsible and we are gathering data to see if this can be verified.

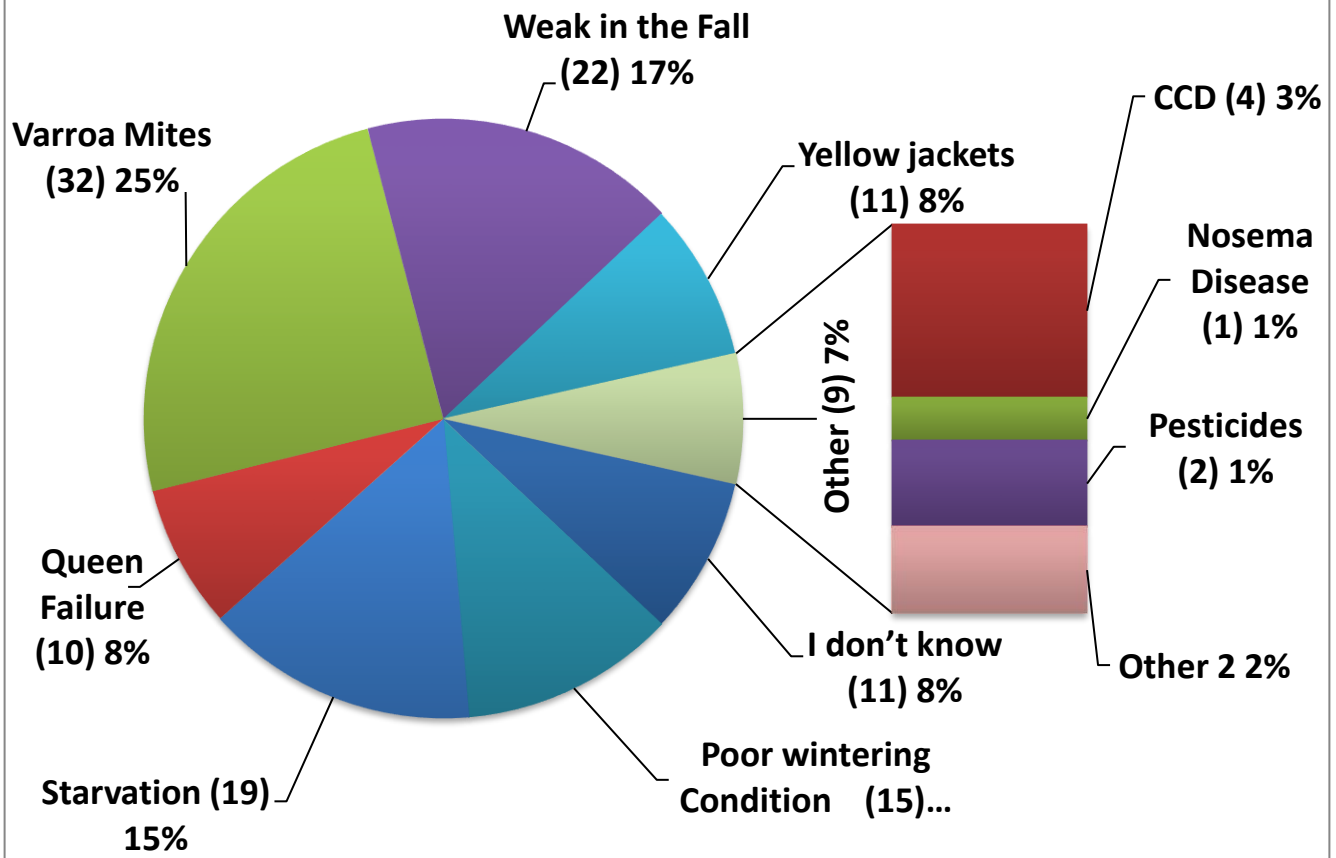
Apiary sites and moves

Two LCNA survey respondents had bees at more than a single apiary. Loss levels were slightly better at the 2nd site compared to the original site. One individual moved bees due to bear attack.

Colony death perceived reason and acceptable loss level

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 115 WA selections (1.85/individual) provided. Varroa mites (32 individuals, 25% of total selections) was the most common choices. Weak in the fall, starvation and poor wintering were next most common followed by yellow jackets and don’t know. Ten individuals only listed queen issues. The two “other” listings were absconding and too small a winter cluster. Figure below shows the number and percent of factor selections statewide. LCBA respondents had 32 selections (1.78/individual). Six said weak in fall and 5 varroa, 4 each selected poor overwintering, yellow jackets and didn’t know. One individual said queens plus one each selected CCD, pesticides, nosema and absconding.

Reasons listed for colony deaths 2023-24



Acceptable loss: Survey respondents were asked reason for loss. Statewide seventeen (15%) indicated zero (no loss). Thirty-three percent of individuals indicated 10% or less. Twenty percent was medium choice. Nineteen percent said 50% was an acceptable loss level. LCBA respondents indicated none (5 individuals – 19%), one said 5%, another five said 10%, 2 said 15%, 3 indicated 20% the median number, same as statewide), 5 selected 25%. The remainder selected 33% and 50%, none indicated 75% or 100%.

Why do colonies die?

There is no easy way to verify reason(s) for colony loss. Colonies in the same apiary may die for several reasons. Examination of dead colonies is at best confusing and, although some options may be ruled out, we are often left with two or more possible reasons for losses. A dead colony necropsy can be of use. Opinions vary 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. Interestingly acceptable level was 1/3th statewide and nearly 1/2 the actual loss level of Lewis Co individuals.

Major factors in colony loss are thought to be mites and their enhancement of viruses especially DWV (deformed wing virus), VDV (Varroa destructor Virus (also termed DWV B) and Israeli and chronic paralysis virus. But we do not have a test for these viruses. It was interesting in that queen problems were the most frequently indicated as were weak in the fall as leading reasons for loss.

Declining nutritional adequacy/forage and diseases, especially at certain apiary sites, are additional factors resulting in poor bee health. Yellow jacket predation is a constant danger to weaker fall colonies. Management, especially learning proper bee care in the first years of beekeeping, remains a factor in losses. What effects our changing environment such as global warming, contrails, electromagnetic forces, including human disruption of them, human alteration to the bee's natural environment and other factors play in colony losses are not at all clear.

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 our honey bees face in the environment. It was encouraging to see from survey responses that losses this past year 30% were still at a low level. More attention to colony strength and possibility of mitigating winter starvation will help reduce some of the losses. Effectively controlling varroa mites will help reduce losses.

Colony Managements

We asked in the survey for information about some managements practiced by respondents. 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 multiple 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.

TO BE CONTINUED: It will take longer to do this analysis. Results will be posted as soon as possible.

Thanks to all Lewis Co beekeepers for completing a survey.