

# An Analysis of Deer Conflict Severity: Deer-Human Conflicts in the Sunland Development of Sequim, Washington.

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**Abstract:** Conflicts with Columbian black-tailed deer (*Odocoileus hemionus columbianus*) in the Sunland Development of Sequim, Washington have been reported to the Washington Department of Fish and Wildlife (WDFW) dating back to 2015. WDFW, in conjunction with the Sunland Owners Association (SLOA), have been working cooperatively through a Community Based Deer Management Process developed by Cornell University and the Nature Conservancy to determine management options that best suit the community's needs. A previous survey of conflict severity conducted in 2018 (see Results and Analysis, 2018) determined that a majority of residents have experienced damage to landscaping and gardens caused by deer browsing in which 35% of residents believed that was a very important concern to address. In 2018, although the majority of residents experienced damage to private property caused by deer, the vast majority of residents (60%) have positive deposition towards deer and are interested in seeing deer within their communities and believed that the most important concern to address is the deer's health and well-being. To determine if any changes of conflict severity and concerns have changed, another survey of residents regarding the severity of conflict with deer in 2021 was needed. Results of the 2021 survey indicated that households think more about deer and/or deer management than in previous years and are showing an increasing trend towards concern with deer population, damage to landscaping and vehicle collisions. While respondents believe it is of importance to consider deer health and well-being, residents of Sunland believe the most important concern is the population of deer within the community, damage to private property caused by deer and are supportive of SLOA working with WDFW to implement management actions to address deer population concerns.

## Introduction

The impact of Columbian black-tailed deer (*Odocoileus hemionus columbianu*) is a seemingly growing problem in Washington's urban areas across the west slope of the Cascade Mountains. Urban deer management is often a topic of controversy within urban communities that many local leaders encounter. Many individuals within a community may feel that residents need to adapt to the presence of deer and live together peacefully while others may be vocal of their disdain for deer and want their numbers drastically reduced. Both individuals often are steadfast in their convictions where finding an unanimously favorable management option is unobtainable.

Issues revolving around deer often stems from citizen's or resident's capacity to tolerate current

deer population levels. This is typically referred to as the saturation point for social carrying capacity. At the saturation point, deer tend to be abundant and causing real and/or perceived conflicts such as damage to landscaping and gardens, damage to native plants, deer-vehicle collisions and tolerating human presence more than deer that would be found in more rural environments. A critical step in determining if a community is at and/or nearing the saturation point for social carrying capacity, surveys regarding the severity of human-wildlife conflicts are needed.

Conflicts with Columbian black-tailed deer in the Sunland Development of Sequim, Washington have been reported to the Washington Department of Fish and Wildlife (WDFW) dating back to 2015.

Residents have reported to WDFW and the Sunland Owners Association (SLOA) damages to gardens and landscaping around their homes and concerns over the overall population of deer. SLOA board members approached WDFW for assistance with managing their deer conflicts within their community.

WDFW employs Wildlife Conflict Specialists who work with counties, cities, homeowners, ranchers, and farmers to provide technical advice and tools to manage a wide range of human-wildlife conflicts. Wildlife Conflict Specialist, in most situations, are only given reports of human-wildlife conflicts and complaints surrounding the presence of wildlife. This is common because most citizens do not feel compelled to report positive interaction with wildlife to wildlife managers. In cases where the reported conflict is likely occurring over a large area or community, more information is needed on the severity of the conflict to determine if that conflict or damage is real or perceived.

In 2018, WDFW, in conjunction with SLOA, implemented a community-wide survey to determine the severity of deer-human conflicts within Sunland ([refer to Results and Analysis, 2018](#)). Although the survey determined that most residents had a positive disposition towards deer, it did show that a large majority (61%) of residents had experienced damage to their landscaping or gardens. Although most residents had experienced damages, only 40% of respondents felt that it was very important to address that issue. In fact most residents, found that the most important issue was the deer's health and well-being.

This survey helped wildlife managers and the SLOA board get a glimpse into the deer conflict issue that faced the Sunland Community. WDFW advised that a committee be established in order to learn more about deer conflict in Sunland, determine the population of deer within the community and begin the process of developing a community-based management plan. In 2020, in response to growing complaints of residents in the community, the Deer Study Committee (DSC) was established by SLOA

comprised of residents with varying opinions and tolerance of deer.

The SLOA Deer Study Committee (DSC), in conjunction with WDFW staff, determined that a survey on the deer conflict severity was needed to determine if any changes or trends were evident and to better inform management planning.

### **Survey Method**

Using the SurveyMonkey® platform, a survey consisting of 14 questions was developed by the DSC to help better understand the deer conflict severity with the Sunland Community. Households who participated in the 2021 Urban Deer Management survey were given a brief summary of data that was collected in the spring and fall of 2020 on the density of deer within Sunland. The Urban Deer Management Survey would require that only one survey per household be submitted for analysis and that an address, which would remain anonymous, be provided for verification purposes.

In January of 2021, a link to the SurveyMonkey® survey was delivered to households via their registered email address with SLOA. The survey remained open from January 2<sup>nd</sup> through 11:59 PM on January 31<sup>st</sup>. Along with the electronic version of the survey, households who wished not to participate on the survey electronically were given an option to receive hard copies to then be delivered to the SLOA office by the January 31<sup>st</sup> end date.

### **Results**

The community of Sunland consists of 900 homes and at the time of completion of the Urban Deer Management Survey, a total of 369 surveys were delivered. Of those 369 surveys, 3 had no or incomplete address and 10 were duplicate entries from a verified address. In total 356 surveys (39.5% participation) were used for analysis of the deer conflict severity in Sunland.

Of the 356 surveys used, 2.8% were submitted by residents who identified that they were renting a

residence. 119 survey respondents (30%) verified that they were condo/townhouse owners.

\*Blank rows (i.e 0% answers) in data tables represent questions that were asked in the 2018 Urban Deer Management Survey but not in the 2021 survey.

Urban Deer Management in the Sunland Community of Sequim, Washington

Q1 Generally, how do you feel about having deer in the Sunland Community?

Answered: 373 Skipped: 0

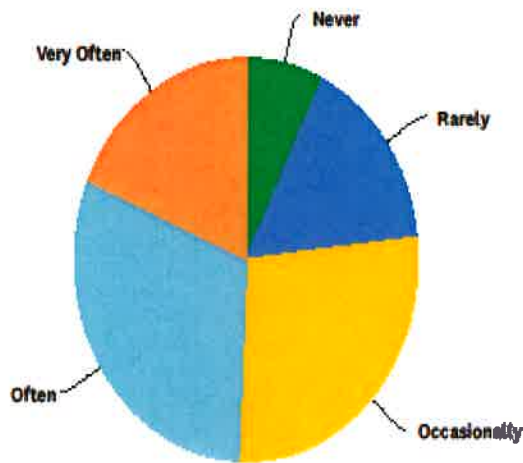


ANSWER CHOICES	RESPONSES	
Very Positively	33.78%	126
Positively	28.54%	99
Neutral	13.94%	52
Negatively	16.89%	63
Very Negatively	8.85%	33
TOTAL		373

Urban Deer Management in the Sunland Community of Sequim, Washington

Q2 Generally, how frequently do you think about deer and/or deer management issues in the Sunland Community?

Answered: 375 Skipped: 0

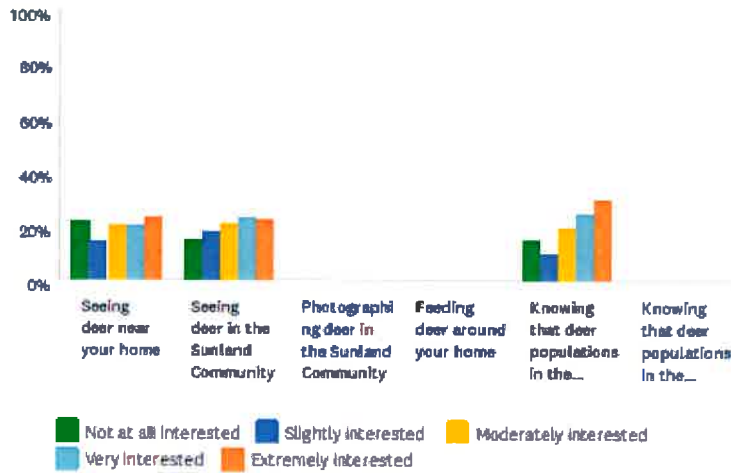


ANSWER CHOICES	RESPONSES	
Never	7.20%	27
Rarely	16.00%	60
Occasionally	27.47%	103
Often	30.67%	115
Very Often	18.67%	70
TOTAL		375

Urban Deer Management in the Sunland Community of Sequim, Washington

Q3 The following is a list of interests people may have regarding deer. Please indicate how interested you are in the following in the Sunland Community.

Answered: 375 Skipped: 0

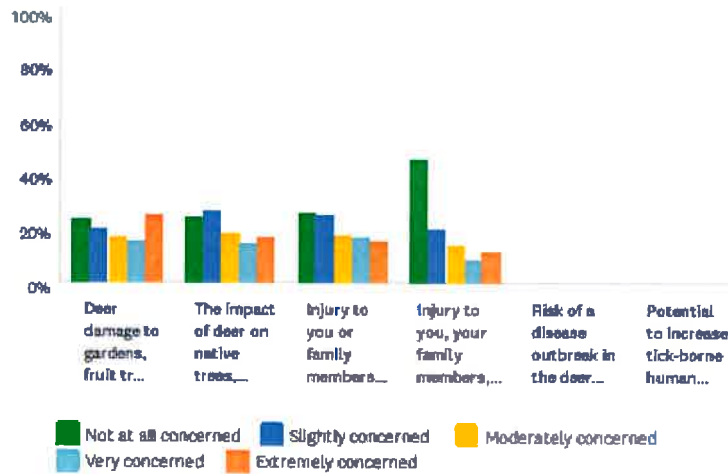


	NOT AT ALL INTERESTED	SLIGHTLY INTERESTED	MODERATELY INTERESTED	VERY INTERESTED	EXTREMELY INTERESTED	TOTAL	WEIGHTED AVERAGE
Seeing deer near your home	21.39% 80	14.71% 55	20.59% 77	20.32% 76	22.99% 86	374	3.09
Seeing deer in the Sunland Community	15.32% 57	18.01% 67	20.97% 78	23.39% 87	22.31% 83	372	3.19
Photographing deer in the Sunland Community	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Feeding deer around your home	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Knowing that deer populations in the Sunland Community are stable and doing well.	15.28% 57	10.72% 40	19.30% 72	24.93% 93	29.76% 111	373	3.43
Knowing that deer populations in the Sunland Community are doing well	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00

Urban Deer Management in the Sunland Community of Sequim, Washington

Q4 The following is a list of concerns people can have about the presence of deer. Please indicate how concerned you are about each in the Sunland Community.

Answered: 374 Skipped: 1

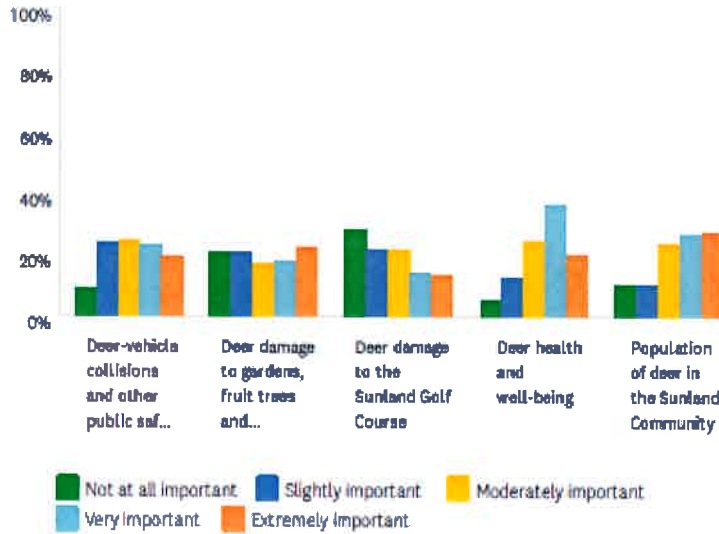


	NOT AT ALL CONCERNED	SLIGHTLY CONCERNED	MODERATELY CONCERNED	VERY CONCERNED	EXTREMELY CONCERNED	TOTAL	WEIGHTED AVERAGE
Deer damage to gardens, fruit trees and plantings around your home	23.26% 87	19.52% 73	18.84% 83	15.51% 58	24.87% 93	374	2.90
The impact of deer on native trees, shrubs, and wildflowers in the Sunland Community	23.80% 89	26.20% 98	18.45% 89	14.44% 54	17.11% 64	374	2.75
Injury to you or family members from a deer-vehicle collision	25.40% 95	24.87% 93	17.65% 86	16.84% 63	15.24% 57	374	2.72
Injury to you, your family members, or pets from deer being aggressive	45.58% 170	20.11% 75	13.67% 51	9.12% 34	11.53% 43	373	2.21
Risk of a disease outbreak in the deer population at Sunland	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00
Potential to increase tick-borne human diseases	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0	0.00

Urban Deer Management in the Sunland Community of Sequim, Washington

Q5 How important is it to you that the following deer-related concerns are addressed in the Sunland Community?

Answered: 374 Skipped: 1

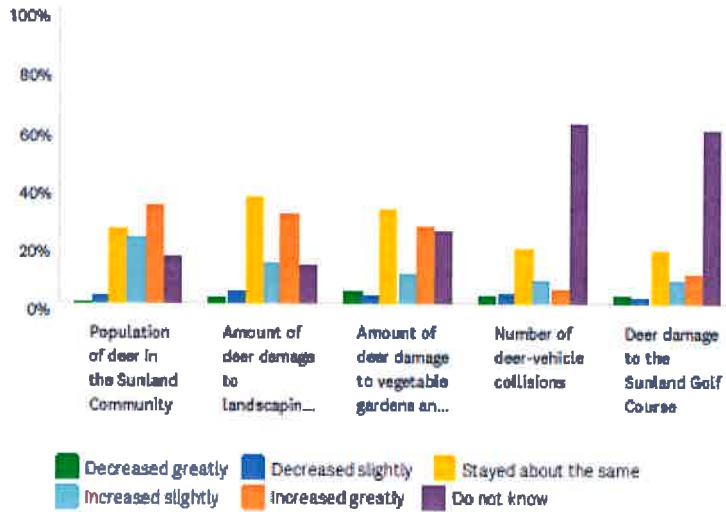


	NOT AT ALL IMPORTANT	SLIGHTLY IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Deer-vehicle collisions and other public safety concerns.	9.36% 35	23.80% 89	24.60% 92	22.99% 86	19.25% 72	374	3.19
Deer damage to gardens, fruit trees and landscaping around homes	21.12% 79	20.86% 78	17.65% 66	17.91% 67	22.46% 84	374	3.00
Deer damage to the Sunland Golf Course	28.42% 106	21.72% 81	21.72% 81	14.75% 55	13.40% 50	373	2.63
Deer health and well-being	6.15% 23	13.10% 49	24.33% 91	38.83% 137	19.79% 74	374	3.51
Population of deer in the Sunland Community	10.46% 39	10.99% 41	23.86% 89	28.81% 100	27.88% 104	373	3.51

Urban Deer Management in the Sunland Community of Sequim, Washington

Q6 Please indicate the extent to which you believe the following events have increased, decreased, or stayed the same in the Sunland Community over the last 5 years.

Answered: 373 Skipped: 2

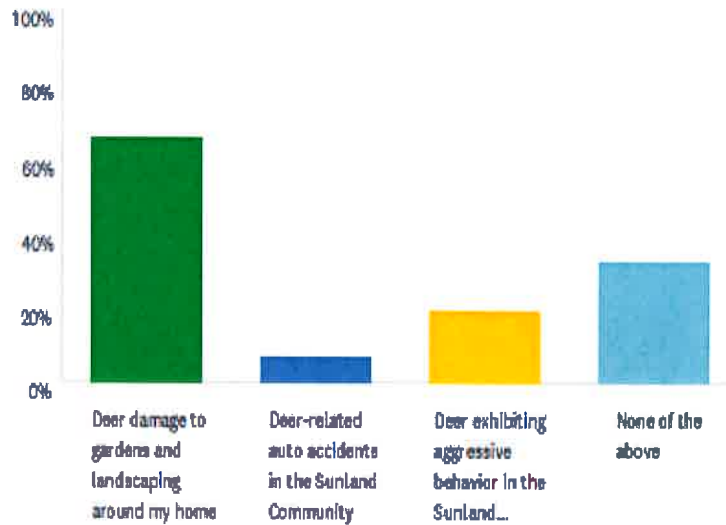


	DECREASED GREATLY	DECREASED SLIGHTLY	STAYED ABOUT THE SAME	INCREASED SLIGHTLY	INCREASED GREATLY	DO NOT KNOW	TOTAL	WEIGHTED AVERAGE
Population of deer in the Sunland Community	0.27% 1	2.69% 10	25.27% 94	22.31% 83	33.33% 124	16.13% 60	372	4.02
Amount of deer damage to landscaping plants around your home	1.88% 7	4.57% 17	36.29% 135	13.71% 51	30.65% 114	12.90% 48	372	3.77
Amount of deer damage to vegetable gardens and fruit trees around your home	4.11% 15	3.01% 11	32.05% 117	10.41% 38	25.75% 94	24.66% 90	365	3.67
Number of deer-vehicle collisions	2.98% 11	3.25% 12	19.24% 71	8.13% 30	4.88% 18	61.52% 227	369	3.23
Deer damage to the Sunland Golf Course	2.71% 10	2.17% 8	17.89% 66	8.13% 30	10.03% 37	59.08% 218	369	3.50



Q7 Which of the following deer-related problems have you personally experienced in the last 5 years? Please check all that apply.

Answered: 375 Skipped: 0



**ANSWER CHOICES**

**RESPONSES**

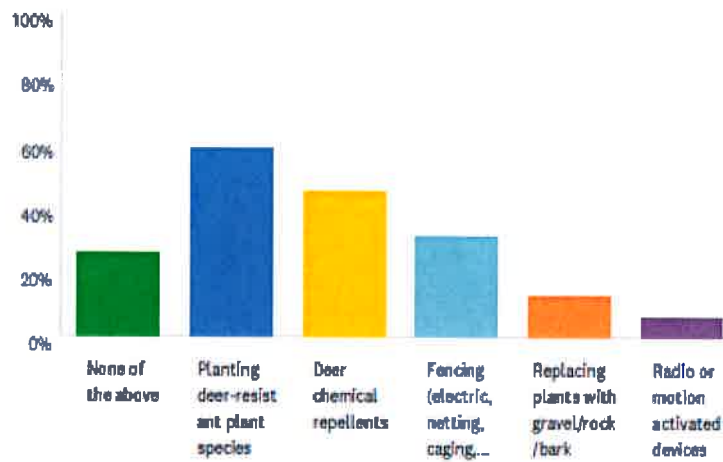
Deer damage to gardens and landscaping around my home	65.33%	245
Deer-related auto accidents in the Sunland Community	7.20%	27
Deer exhibiting aggressive behavior in the Sunland Community	19.73%	74
None of the above	32.80%	123

Total Respondents: 375

Urban Deer Management in the Sunland Community of Sequim, Washington

Q8 If you have experienced deer damage on your property, what mitigation efforts have you taken to control or lessen the damage? Please check all that apply.

Answered: 363 Skipped: 12

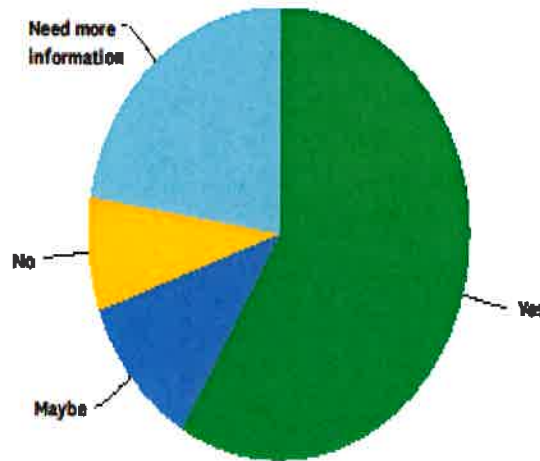


ANSWER CHOICES	RESPONSES	
None of the above	25.90%	94
Planting deer-resistant plant species	58.68%	213
Deer chemical repellents	45.45%	165
Fencing (electric, netting, caging, etc.)	31.68%	115
Replacing plants with gravel/rock/bark	13.22%	48
Radio or motion activated devices	6.61%	24
Total Respondents: 383		

Urban Deer Management in the Sunland Community of Sequim, Washington

Q9 Would you be supportive of the Deer Advisory Committee, working cooperatively with the Department of Fish and Wildlife, to manage and control deer populations?

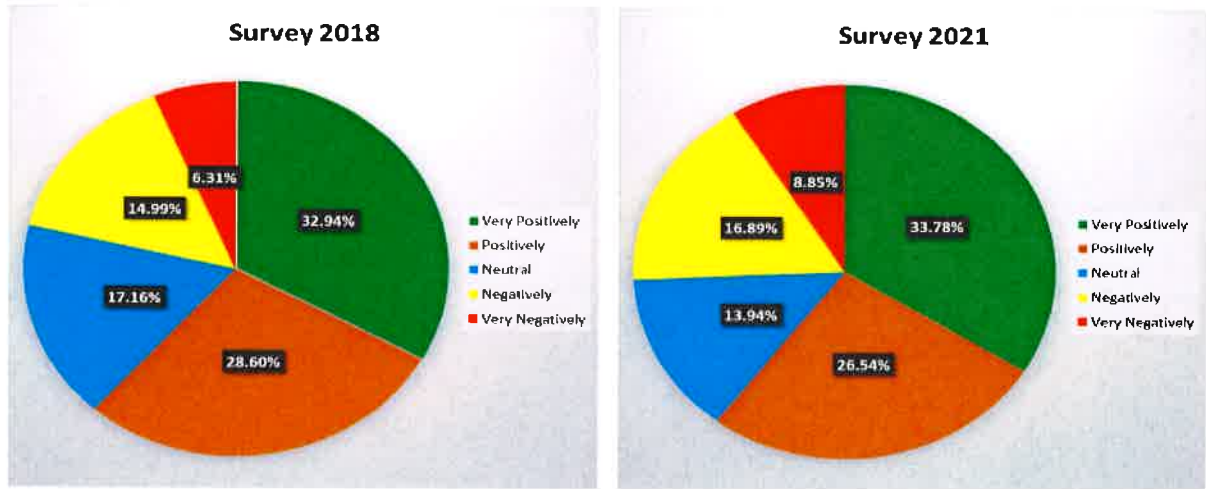
Answered: 374 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	58.56%	219
Maybe	10.96%	41
No	8.02%	30
Need more information	22.46%	84
TOTAL		374

**Fig 1:** Question 1 of the Urban Deer Management Survey results by year.

## Generally, how do you feel about, having deer in the Sunland Community?



### Analysis

Similarly to the 2018 Results and Analysis of the Urban Deer Management Survey, in 2021, 60% of respondents in Sunland feel positively to very positively about having deer in their community (Q1, 2021) and have an interest in knowing that deer populations are stable and doing well. When comparing data from the 2018 data to that of 2021 (Figure 1), although the percentage of respondents who feel positively to very positively stays within the 60% range, we can see that there is an increasing trend of respondents who are feeling more negatively to very negatively about having deer in their community. The percentage of respondents who viewed deer in the Sunland Community negatively or very negatively increased by 5% in 2021 to 26%. Those that may have been more neutral about having deer within their community in 2018 are beginning to feel more negative in their sentiments towards deer in 2021.

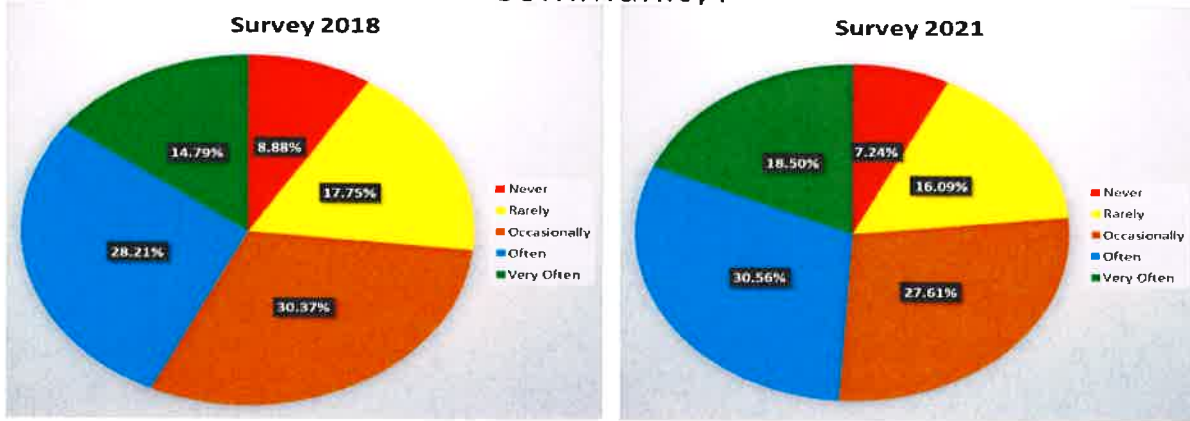
Similarly, Question 2 identified that 49% of respondents think about deer and/or deer management issues in Sunland often to very often.

Respondents think about deer and or deer management more frequently than that of 3 years ago. When comparing the results for Question 2 in 2021 to that of 2018 (Figure 2) we can again see that there is an increasing trend of respondents who are thinking about deer more often to very often. An increase of 6% from 2018. Data compared from 2018 to 2021 also shows that respondents who think about deer and/or deer management issues in Sunland is decreasing and shifting to thinking about these topics more frequently.

Respondents of the survey in Sunland show more concern towards damage to their gardens, fruit trees and plantings around their homes than that of damage to native plants, injury caused by deer-vehicle collisions or injury caused by deer acting aggressively (Q3, 2021). Data compared for this question from 2018 to 2021 (Figure 3 - 6) shows that respondents are shifting from more neutral positions of being slightly to moderately concerned to the more extreme ends of concern (i.e not at all concerned, extremely concerned). In Sunland there

**Fig 2:** Question 2 of the Urban Deer Management Survey results by year.

## Generally, how frequently do you think about deer and/or deer management issues in the Sunland Community?

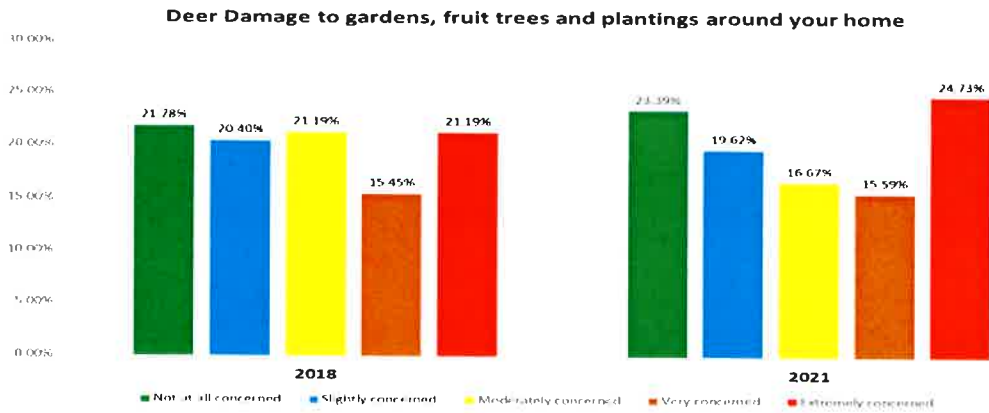


exists a clear division to the level of concern or tolerance that respondents have towards deer damaging their gardens, fruit trees or landscaping. This division in individual tolerance levels to deer browsing damage by respondents can be attributed to a wide variety of reasons to include: respondents who live in houses versus condos/townhomes (i.e. generally a lack of landscaping or gardens), respondents who maintain their landscaping on their own versus hiring out landscaping companies or respondents that put more financially into landscaping than other respondents.

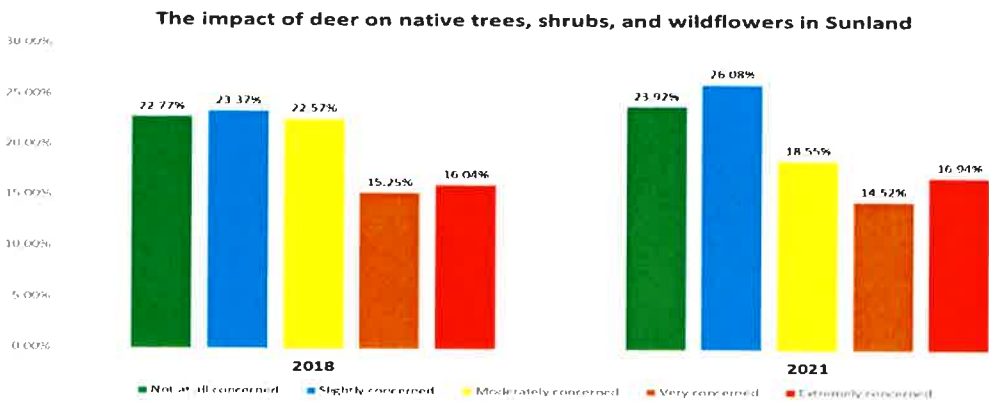
Results compared from 2018 to 2021 regarding concern over injury to deer vehicle collisions (Figure 5) shows that most respondents (~50%) are only slightly to not at all concerned. Results also indicate that there is a trend showing that respondents in Sunland are beginning to feel more concerned about injury caused by deer-vehicle collisions than that of 3 years ago. Respondents of the survey identified that deer vehicle collisions, when compared to 2018 data (Figure 7) is an increasing concern and one that is of increasing importance to address

Respondents to the survey, when asked about the importance at which a concern should be addressed, most (56%) believe that deer health and well-being is a very to extremely important concern to address while 40% believe that it is also very to extremely important to address damage to landscaping and gardens. With that, the survey has also identified that the most respondents (~55%) tend to believe that the population of deer in Sunland is an important concern to address (Q5, 2021). The SLOA DSC will need to consider the importance of these concerns that the respondents have suggested when considering management action options.

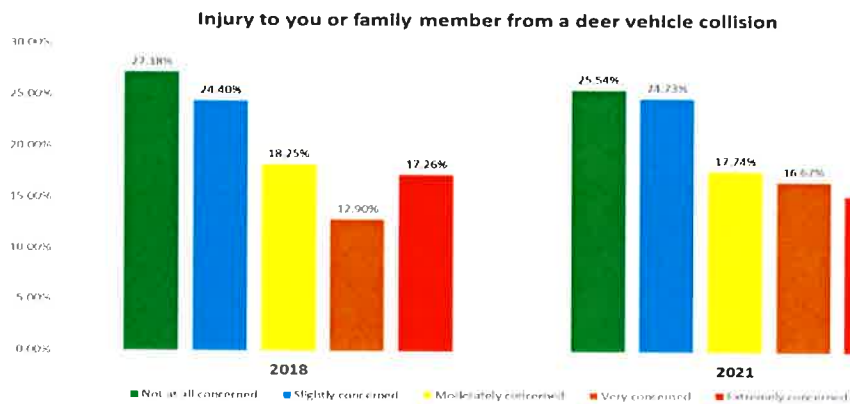
Results in 2021 compared to that of 2018 indicate that most respondents believe that the extent of change for damage to landscaping around their home has either stayed the same or increased greatly (Figure 8). Roughly 56% of respondents believe that the population of deer in Sunland has increased slightly to increased greatly (Figure 9).



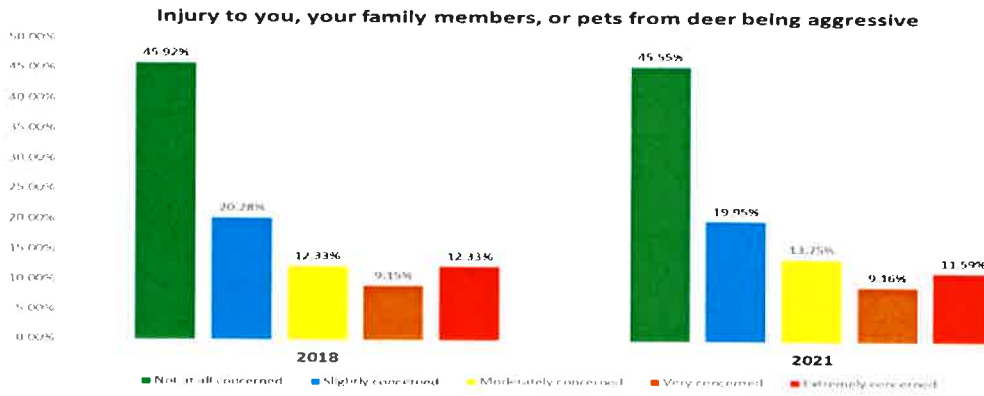
**Fig 3:** Question 3. Data compared from 2018 to 2021 on the concern of damage to gardens, fruit trees and landscaping.



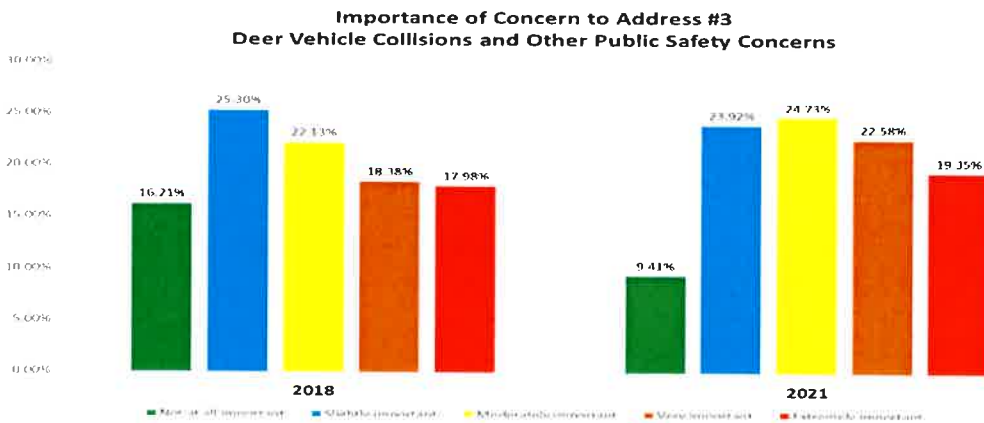
**Fig 4:** Question 3. Data compared from 2018 to 2021 on the concern of impacts of deer on native trees, shrubs, and wildflowers.



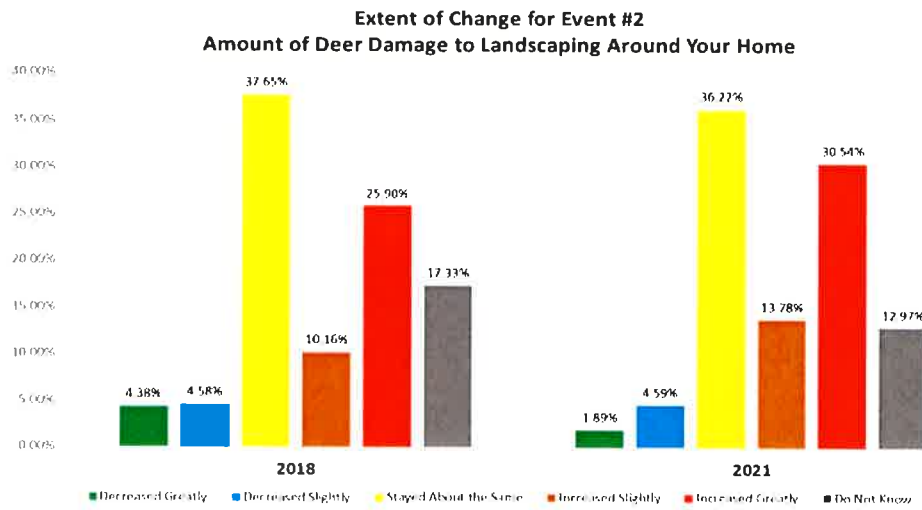
**Fig 5:** Question 3. Data compared from 2018 to 2021 on the concern of injury to respondent or their family member from a deer-vehicle collision.



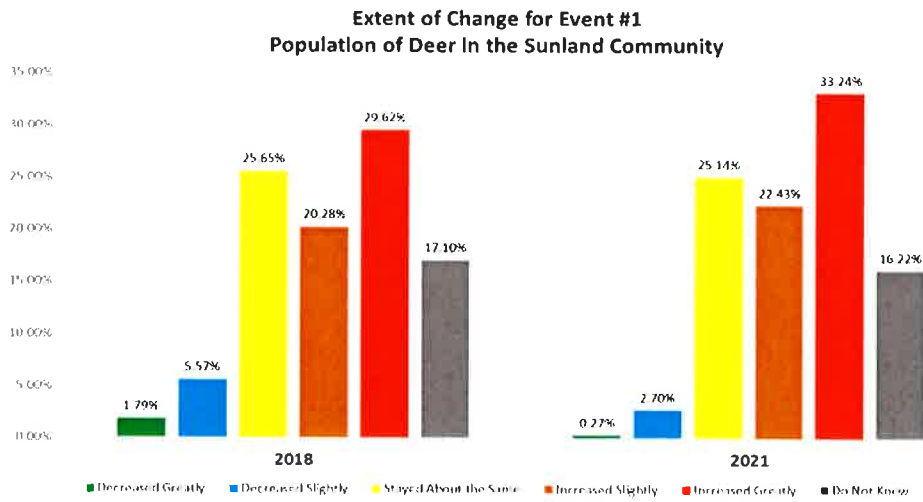
**Fig 6:** Question 3. Data compared from 2018 to 2021 on the concern of injury to respondent, their family members or pets from a deer acting aggressively.



**Fig 7:** Question 4. Data compared from 2018 to 2021 on the importance to address the concern of deer vehicle collisions and other public safety concerns.



**Fig 8:** Question 6. Data compared from 2018 to 2021 on the extent of change regarding deer damage to landscaping around respondents' homes.



**Fig 8:** Question 6. Data compared from 2018 to 2021 on the extent of change regarding the population of deer in the Sunland Community.



## Comment Analysis

The final question on the 2021 Urban Deer Management Survey regarded any additional comments that the members of the community would like to add. In total 198 comments were received. Comments were analyzed using a basic sentiment analysis and word clouds to determine key phrases mentioned (Figure 9). ‘Deer’ and ‘Sunland’ were the most mentioned words found in the comments. The words ‘population’, ‘plants’, ‘deer population’ and ‘many’ were the next 4 most mentioned within the comments.

Sentiment analysis indicated that 32% of comments were of positive deposition towards deer. 37 comments were of the simple sentiment of “I love to see the deer in our community,” with little discussion beyond that. In addition, 26 comments also recognize that a problem with deer is occurring in Sunland and some management steps are needed for the community’s benefit. Often these two might appear in one longer statement, as an understanding that they might love seeing deer but maybe things are getting out of hand.

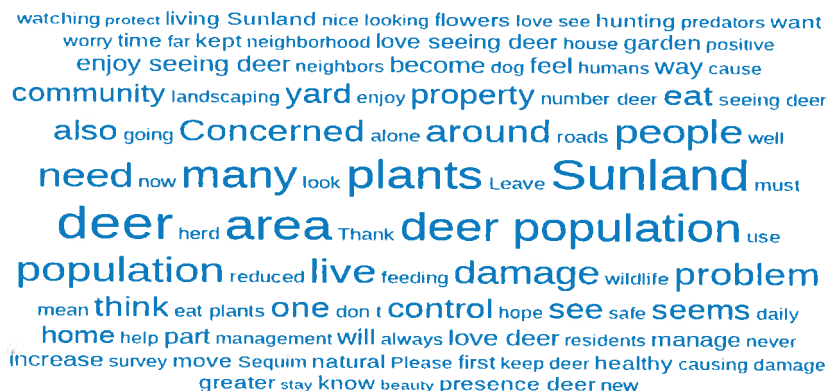
Connected with these comments are 11 thoughts that damage is being done, to them or others, but they don’t see that as problem for them.

The remaining 68% of comments were of the negative deposition towards deer. 49 comments were emphatic that the deer population needs to be reduced and managed. Another 10 comments wanted management action but their solution was removal of the deer to more wooded environments. Many others expressed the desire for more drastic reductions. Another 43 respondents reported suffering extensive damages and their frustration with growing deer numbers.

22 respondents iterated the expenses that they suffered, sometimes in the thousands of dollars. Respondents mentioned trying nonlethal methods such as deer repellent sprays and fencing to little success. 19 respondents were worried about the aggressiveness of the deer that show signs have habituation to properties that they would not be scared off as they once were. Some found the aggressiveness of both does and bucks as a danger to their pets. 11

**Fig 9:** Word Cloud of common words used in the comment portion of the 2021 Urban Deer Management Survey.

**Q14 Please use the space below to provide any comments or additional input for us about deer and deer management in the Sunland Community.**



reported that neighbors were feeding the deer to bring them nearby, attracting other potential nuisance wildlife species as well. 28 worried about the health of the deer as they become more overpopulated.

Many comments expressed the need for management action to include deer population control and education pamphlets on gardening or plantings that are deer resistant. Many respondents want to be able to see deer in their community despite the need or desire for management intervention. Respondents also indicated that they were concerned for the humane methodology of management action choices.

### **Management Implications**

The DSC, in conjunction with WDFW, will be utilizing this survey data to draft a comprehensive Deer Management Plan for the Sunland Community. This management plan will consider the sentiments of the community while still being able to address the important concerns that the respondents have identified in this survey. Due to the controversial nature of urban deer management, it is unobtainable to reach a unanimous consensus. The DSC will draft a plan that meets the majority of the community's needs and goals.

Upon completion of the Sunland Deer Management Plan, the plan will go out to the community for comment prior to any development of enactment of policy. After comments are received and if any alterations are needed, the DSC, will present it to the board and WDFW for adoption.