

What Is the Value of Wild Bee Pollination for Wild Blueberries and Cranberries, and Who Values It?

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Supplementary materials with questions used for three producer surveys, two representative crop enterprise budgets, and questions used for two consumer willingness-to-pay surveys for Maine, USA, wild blueberry and Massachusetts, USA, cranberry.

Table S1 – Producer survey questions for Maine, USA, wild blueberry.

Number	Question
1	What is the TOTAL (<i>both fruiting and prune</i>) area of blueberries that you manage?
2	Over a typical two-year period, what area do you pollinate with rented or owned honey bees or with commercial bumble bees?
3	What is the area you rely exclusively on <u>native</u> ^a bees (i.e., do not use any rented or owned bees)?
4	Roughly what percent of your fruit set do you feel comes from <u>native</u> bees?
5	How certain do you feel about your answer to question #4? [<i>very uncertain, uncertain, neither uncertain nor certain, certain, very certain</i>]
6	On average, how many TOTAL honey bee hives do you rent in a year? Priced at?
7	On average, how many TOTAL bumble bee quads do you rent in a year? Priced at?
8	Roughly what percent DECREASE in fruit set do you think you would see if you rented no bees?
9	On fields where you didn't put bees this year, roughly what percent INCREASE in fruit set do you think you would see if you put rented bees?
10	On average, how important do you think <u>native</u> bees are for pollinating blueberries in Maine? [<i>very important, somewhat important, neither important/unimportant, somewhat unimportant, very unimportant</i>]
11	Under what circumstances, if any, do you think <u>native</u> bees are important?
12	What is the main type(s) of landscape surrounding your fields within a half-mile of the field's edges? [<i>pine forest, mixed/broadleaf forest, marsh/wetland, clear cuts/open meadow, houses/commercial, farmland</i>]
13	How would you rate the quality of the native pollinator habitat in the landscape surrounding your field or largest field within a half-mile of the field's edges? [<i>very good, good, fair, poor, very poor</i>]
14	Native pollinator populations vary from year to year. In your opinion, how often would you be able to get sufficient pollination from <u>native</u> pollinators alone? [<i>never, 1 year in 4, 2 years in 4, 3 years in 4, every year</i>]
15	Did you do any of the following this year? Please circle either YES or NO.
	Own honey bees

	Own bumble bees
	Use leaf cutting bee nest boxes or bumble bee nesting items
	Avoid mowing wildflowers to provide food for pollinators
	Plant wildflowers or bee meadows specifically for pollinators
	Alter pesticide use in any way to help pollinators
	Leave standing dead wood for pollinators
	Monitor my <u>native</u> bees in any way
	Limit floral competition during bloom by cutting wildflowers or trees
	Rent fewer bees because my neighbor's bees were pollinating my fields
16	Briefly list anything else you have ever done to improve pollinator populations or habitat.
17	Do you agree or disagree with the following statements? [strongly agree, agree, neither agree nor disagree, disagree, strongly disagree]
	Monitoring the size of my <u>native</u> pollinator population would be easy to do.
	Learning how to identify <u>native</u> pollinators in my fields would be difficult to do.
18	What are your main concerns about pollination ?
	<u>General Background Information:</u>
19	How many years have you grown blueberries?
20	What percent of the time you work at paid jobs is growing blueberries?
21	Which of the following best describes your pest management style? [integrated pest management, organic, no spray, traditional]
22	What is your average yield per area over the past 10 years (weight/area)?
23	For last year's crop, what were you paid for your blueberries (\$/weight)?
24	What percent of your income comes from blueberries?
25	On average, how many University of Maine Cooperative Extension grower meetings do you attend per year?
26	What is your education level? [some high school, high school, some college, technical/vocational degree, college, some grad school, graduate degree]
	<u>Economics:</u>
27	In a crop year, how many managed honey bee hives would you rent if these hives were priced at \$40, \$120, \$200, \$280, \$360, or \$440?
28	What do you think the quality of the managed honey bee hives is that you rent? [very low quality, moderately low quality, average quality, moderately high quality, very high quality]
29	If you sell blueberries for frozen processing, what area of blueberries would you grow for frozen processing at different prices per unit weight? If you decide to clear more land, assume prices will last for three years as you wait for your crop to establish.
30	At what price per unit weight would you grow NO blueberries for frozen processing?
31	How much would you be willing to invest per year in management practices such as planting flowers, etc. so that <u>NATIVE</u> pollinators would contribute to making sure that 50% of your crop was pollinated? That 100% of your crop was pollinated?
32	How certain are you of your answers to the last question (#31) about investment? [very uncertain, uncertain, neither uncertain nor certain, certain, very certain]

33	If you are NOT “certain” or “very certain,” please explain.

^a These are “wild” bees/pollinators. Use of the word “native” is inaccurate, since feral (wild) honey bees are native to Africa and Europe.

Table S2 – Producer survey questions for Massachusetts, USA, cranberry.

Number	Question
1	What is the TOTAL area of cranberries you manage?
2	What and how many varieties of cranberries do you manage?
3	Over a typical year, what area do you pollinate with rented or owned honey bees or with commercial bumble bees?
4	What is the area you rely exclusively on <u>native</u> ^a bees (i.e., do not use any rented or owned bees)?
5	Roughly what percent of your fruit set do you feel comes from <u>native</u> bees?
6	How certain do you feel about your answer to question #4? [very uncertain, uncertain, neither uncertain nor certain, certain, very certain]
7	On average, how many TOTAL honey bee hives do you rent in a year? Priced at?
8	On average, how many TOTAL bumble bee quads do you rent in a year? Priced at?
9	Roughly what percent DECREASE in fruit set do you think you would see if you rented no bees?
10	On fields where you didn’t put bees this year, roughly what percent INCREASE in fruit set do you think you would see if you put rented bees?
11	On average, how important do you think <u>native</u> bees are for pollinating cranberries in Massachusetts? [very important, somewhat important, neither important/unimportant, somewhat unimportant, very unimportant]
12	Under what circumstances, if any, do you think <u>native</u> bees are important?
13	What is the main type(s) of landscape surrounding your fields within a half-mile of the field’s edges? [pine forest, mixed/broadleaf forest, marsh/wetland, clear cuts/open meadow, houses/commercial, farmland]
14	How would you rate the quality of the native pollinator habitat in the landscape surrounding your field or largest field within a half-mile of the field’s edges? [very good, good, fair, poor, very poor]
15	Native pollinator populations vary from year to year. In your opinion, how often would you be able to get sufficient pollination from <u>native</u> pollinators alone? [never, 1 year in 4, 2 years in 4, 3 years in 4, every year]
16	Did you do any of the following this year? Please circle either YES or NO.
	Own honey bees
	Own bumble bees
	Use leaf cutting bee nest boxes or bumble bee nesting items
	Avoid mowing wildflowers to provide food for pollinators
	Plant wildflowers or bee meadows specifically for pollinators
	Alter pesticide use in any way to help pollinators

	Leave standing dead wood for pollinators
	Monitor my <u>native</u> bees in any way
	Limit floral competition during bloom by cutting wildflowers or trees
	Rent fewer bees because my neighbor's bees were pollinating my fields
17	Briefly list anything else you have ever done to improve pollinator populations or habitat.
18	Do you agree or disagree with the following statements? [strongly agree, agree, neither agree nor disagree, disagree, strongly disagree]
	Monitoring the size of my <u>native</u> pollinator population would be easy to do.
	Learning how to identify <u>native</u> pollinators in my fields would be difficult to do.
19	What are your main concerns about pollination ?
	<u>General Background Information:</u>
20	How many years have you grown cranberries?
21	What percent of the time you work at paid jobs is growing cranberries?
22	Which of the following best describes your pest management style? [integrated pest management, organic, no spray, traditional]
23	What is your average yield per area over the past 10 years (weight/area)?
24	For last year's crop, what were you paid for your cranberries (\$/weight)?
25	What percent of your income comes from cranberries?
26	On average, how many University of Massachusetts Cooperative Extension grower meetings do you attend per year?
27	What is your education level? [some high school, high school, some college, technical/vocational degree, college, some grad school, graduate degree]
	<u>Economics:</u>
28	In a crop year, how many managed honey bee hives would you rent if these hives were priced at \$40, \$120, \$200, \$280, \$360, or \$440?
29	What do you think is the quality of the managed honey bee hives is that you rent? [very low quality, moderately low quality, average quality, moderately high quality, very high quality]
30	If you sell cranberries for wholesale market(s), what area of cranberries would you grow for frozen processing at different prices per unit weight? If you decide to add more bogs, assume that prices will last for three years as you wait for your crop to establish.
31	At what price per unit weight would you grow NO cranberries for wholesale market(s)?
32	How much would you be willing to invest per year in management practices such as planting flowers, etc. so that <u>NATIVE</u> pollinators would contribute to making sure that 50% of your crop was pollinated? That 100% of your crop was pollinated?
33	How certain are you of your answers to the last question (#32) about investment? [very uncertain, uncertain, neither uncertain nor certain, certain, very certain]
34	If you are NOT "certain" or "very certain," please explain.

^a These are "wild" bees/pollinators. Use of the word "native" is inaccurate, since feral (wild) honey bees are native to Africa and Europe.

Table S3 – Supplemental producer survey questions for Massachusetts, USA, cranberry.

Number	Question
1	What is the TOTAL area of cranberries and surrounding land do you manage? In how many locations?
2	How many miles do you drive to do a full round trip to all your bog(s)?
3	In the first year you grew cranberries , how many rented and/or owned honey bee hives per acre and bumble bee quads per acre did you use?
4	In 1985 , how many honey bee hives per acre and bumble bee quads per acre did you use?
5	In 2013 , how many honey bee hives per acre and bumble bee quads per acre did you use?
6	Between 1985–2013, how did your stocking density of these pollinators change? [steady change, higher when cranberry prices higher (vice versa), other (specify)]
7	In 2012 , what do you feel was a fair price per acre for the following type of bogs or land?
	Renovated bog with major processor contract.
	Traditional bog with major processor contract.
	Renovated bog with independent contract.
	Traditional bog with independent contract.
	Working and forested area around the bog?
8	Roundup® herbicide wiping:
	What percent of bogs are wiped per year? How many gallons of Roundup® are used per year?
	What percent is Roundup® is used in wiping solution?
	What range of area can be wiped per hour?
	Equipment used? [hockey stick(s), other (specify)]
9	Herbicide spot treatment:
	What percent of bogs are spot-treated with herbicides per year?
	Equipment used? [manual drop spreader(s), backpack sprayer(s), other (specify)]
10	In an average year, how many acres are hand-weeded at what cost?
11	How many full-time (i.e. 2,000 hours/year) and part-time (specify hours/year) workers do you hire per year, and at what pay?
12	How many hours and how much energy are used each time a bog is flooded (fuel and/or labor steps include transportation to bogs, initiating flooding, monitoring, and removing flooding)?
13	How many hours and how much energy are used each time a bog is frost-protected with the irrigation system (fuel and/or labor steps include transportation to bogs, turning on water, monitoring, and turning off water)?
14	How many hours and how much energy are used each time a bog is irrigated (fuel and/or labor steps include transportation to bogs, turning on water, monitoring, and turning off water)? The energy used per hour for irrigation is assumed to be IDENTICAL to frost protection. Specify if energy use is different than frost protection.
15	How many hours and how much energy are used each time a bog is chemigated (fuel and/or

	labor steps include transportation to bogs, turning on water, monitoring, and turning off water)? The energy used per hour for chemigation is assumed to be IDENTICAL to frost protection. Specify if energy use different than frost protection.
16	Price paid for diesel fuel used on farm?
17	Price paid for propane used on farm?

Table S4 – Representative enterprise budget for 40.4686 hectare Maine, USA, wild blueberry farm selling berries for frozen processing.

	Total	Per hectare	Per kilogram
Number of hectares	40.4686	-	-
Wild blueberry yield (kg)	149,912	3,704.4	-
Price (\$/kg)	\$1.607	-	-
Annual total revenue	\$240,908	\$5,952.97	\$1.607
Annual variable costs			
Fertilizer			
Granular	\$7,954	\$196.55	\$0.05
Other	\$0	\$0	\$0
Chemicals			
Fungicides	\$1,650	\$40.77	\$0.011
Herbicides (pre-merge)	\$11,295	\$279.11	\$0.08
Herbicides (post-merge)	\$2,481	\$61.31	\$0.02
Herbicides (wiping)	\$154	\$3.81	\$0.001
Insecticides	\$942	\$23.28	\$0.006
Insect traps	\$73	\$1.80	\$0.0005
Pollination (honey bee hive rentals)	\$41,680	\$1,029.94	\$0.28
Sulfur and other pH adjustment	\$1,192	\$29.45	\$0.008
Labor	\$15,398	\$380.49	\$0.10
Diesel fuel and oil	\$4,981	\$123.08	\$0.03
Burning for pruning	\$7,000	\$172.97	\$0.05
Heating	\$1,750	\$43.24	\$0.012
Maintenance and upkeep	\$8,329	\$205.81	\$0.06
Managed pollinator (owned)	\$0	\$0	\$0
Miscellaneous			
Containers	\$0	\$0	\$0

Contracted oil delivery (burn)	\$0	\$0	\$0
Custom hire	\$0	\$0	\$0
Fire permit	\$20	\$0.49	\$0.0001
Hauling and trucking	\$0	\$0	\$0
Install drainage tile	\$0	\$0	\$0
Packaging	\$0	\$0	\$0
Rent or lease (electric fence)	\$2,000	\$49.42	\$0.013
Rent or lease (land)	\$0	\$0	\$0
Replacement teeth (flail mower)	\$167	\$4.13	\$0.001
Shipping	\$0	\$0	\$0
Storage and warehousing	\$0	\$0	\$0
Supplies	\$500	\$12.36	\$0.003
Soil and tissue testing	\$0	\$0	\$0
Tax for wild blueberries	\$2,479	\$61.26	\$0.017
Utilities	\$600	\$14.83	\$0.004
Interest	\$963	\$23.80	\$0.006
Total variable costs	\$111,608	\$2,757.90	\$0.753
 Total overhead costs	 \$4,595	 \$113.54	 \$0.031
 Annual fixed costs			
Depreciation			
Buildings and structures	\$1,417	\$35.01	\$0.009
Excavation equipment	\$9,000	\$222.39	\$0.06
Drainage tiles	\$0	\$0	\$0
Burning equipment	\$540	\$13.34	\$0.004
Mowing equipment	\$1,200	\$29.65	\$0.008
Fertilization equipment	\$300	\$7.41	\$0.002
Integrated pest management	\$0	\$0	\$0
Spraying equipment	\$1,867	\$46.13	\$0.012
Wiping equipment	\$353	\$8.72	\$0.002
Irrigation	\$0	\$0	\$0
Harvesting equipment (hand)	\$0	\$0	\$0
Harvesting equipment (mech.)	\$2,700	\$66.72	\$0.018
Field boxes	\$800	\$19.77	\$0.005
Managed pollinator (owned)	\$0	\$0	\$0
Processing equipment	\$0	\$0	\$0
Tools	\$1,360	\$33.61	\$0.009
Tractors and vehicles	\$11,369	\$280.93	\$0.08
Land	\$23,884	\$590.19	\$0.16
Interest on loans	\$791	\$19.55	\$0.005
Insurance	\$4,576	\$113.08	\$0.03
Taxes	\$2,234	\$55.20	\$0.015

Total fixed costs	\$62,391	\$1,541.70	\$0.419
Annual total cost	\$178,594	\$4,413.14	\$1.203
Net farm income (NFI)	\$62,314	\$1,539.83	\$0.404
Return over variable cost (ROVC)	\$129,300	\$3,195.07	\$0.854
Performance measures			
<i>Breakeven revenue</i>		\$/hectare	\$/kg
Long-run to cover all costs		\$4,413.14	\$1.203
Short-run to cover operating costs		\$2,757.90	\$0.753

Table S5 – Representative enterprise budget or 40.4686 hectare Massachusetts, USA, cranberry farm selling berries for processing.

	Total	Per hectare	Per kilogram
Number of hectares	40.4686	-	-
Cranberry yield (kg)	606,847	14,995.5	-
Price (\$/kg)	\$0.933	-	-
Annual total revenue	\$566,188	\$13,990.81	\$0.933
Annual variable costs			
Fertilizer			
Granular	\$9,643	\$238.28	\$0.016
Soluble	\$0	\$0	\$0
Liquid	\$0	\$0	\$0
Other	\$0	\$0	\$0
Chemicals			
Fungicides	\$5,865	\$144.93	\$0.01
Herbicides (pre-merge)	\$10,305	\$254.64	\$0.02
Herbicides (post-merge)	\$3,062	\$75.66	\$0.005
Herbicides (wiping)	\$1,632	\$40.33	\$0.003
Insecticides	\$16,661	\$411.70	\$0.03
Insect traps	\$250	\$6.18	\$0.0004
Pollination (honey bee hive rentals)	\$15,724	\$388.55	\$0.03

Plants (runners)	\$22,206	\$548.72	\$0.04
Sand	\$36,667	\$906.06	\$0.06
Sulfur and other pH adjustment	\$0	\$0	\$0
Labor	\$24,732	\$611.14	\$0.04
Diesel fuel and oil	\$17,016	\$420.47	\$0.03
Heating	\$5,000	\$123.55	\$0.01
Maintenance and upkeep	\$31,400	\$775.91	\$0.05
Managed pollinator (owned)	\$0	\$0	\$0
Miscellaneous			
Cranberry association fee	\$2,709	\$66.94	\$0.004
Cranberry market committee tax	\$3,612	\$89.25	\$0.006
Containers	\$0	\$0	\$0
Custom hire	\$0	\$0	\$0
Hauling and trucking	\$0	\$0	\$0
IPM and other crop services	\$0	\$0	\$0
Miscellaneous	\$7,300	\$180.39	\$0.01
Packaging	\$0	\$0	\$0
Professional services / consults	\$7,200	\$177.92	\$0.01
Rent or lease	\$0	\$0	\$0
Sanding (custom hire)	\$0	\$0	\$0
Shipping	\$0	\$0	\$0
Storage and warehousing	\$0	\$0	\$0
Supplies	\$0	\$0	\$0
Soil and tissue testing	\$31	\$0.77	\$0.0001
Utilities	\$600	\$14.83	\$0.001
Interest	\$2,027	\$50.09	\$0.003
Total variable costs	\$223,642	\$5,526.31	\$0.379
 Total overhead costs	 \$4,495	 \$111.07	 \$0.007
 Annual fixed costs			
Depreciation			
Buildings and structures	\$2,583	\$63.83	\$0.004
Bog renovation and drainage	\$8,267	\$204.28	\$0.01
Spraying equipment	\$440	\$10.87	\$0.001
Fertilization equipment	\$1,224	\$30.25	\$0.002
Irrigation	\$30,400	\$751.20	\$0.05
Mowing / brush cut equipment	\$40	\$0.99	\$0.0001
IPM equipment	\$5	\$0.12	\$0.00001
Wiping equipment	\$428	\$10.58	\$0.001
Harvesting equipment	\$7,180	\$177.42	\$0.01
Sanding equipment	\$1,680	\$41.51	\$0.003
Water catchment / containment	\$0	\$0	\$0

Managed pollinator (owned)	\$0	\$0	\$0
Tools	\$1,360	\$33.61	\$0.002
Tractors and vehicles	\$30,593	\$755.97	\$0.05
Land	\$154,047	\$3,806.58	\$0.25
Interest on loans	\$17,973	\$444.12	\$0.03
Insurance	\$4,618	\$114.11	\$0.01
Taxes	\$1,069	\$26.42	\$0.002
Total fixed costs	\$261,907	\$6,471.86	\$0.425
 Annual total cost	 \$490,044	 \$12,109.24	 \$0.811
 Net farm income (NFI)	 \$76,144	 \$1,881.57	 \$0.122
Return over variable cost (ROVC)	\$342,546	\$8,464.50	\$0.554
 Performance measures			
<i>Breakeven revenue</i>		\$/hectare	\$/kg
Long-run to cover all costs		\$12,109.24	\$0.811
Short-run to cover operating costs		\$5,526.31	\$0.379

Table S6 – Consumer willingness to pay survey for USA blueberry showing example scenario options A, B, C, and D.

Section	Characteristics	Option A	Option B	Option C	Option D
Blueberry characteristics	Price (\$/dry liter)	\$2.27	\$4.99	\$7.72	\$10.44
	Pollination method	Commercial honey bees	Native ^a bees	-	-
	Type	Fresh	Frozen	-	-
	Where produced	In-state	Out-of-state	-	-
	Variety	Wild	Cultivated	-	-
Section	Narrative				
Description	Most of these characteristics are familiar to blueberry consumers, but the pollination method may not be. Blueberries are often pollinated by commercial honey bees, but honey bee numbers have declined because of bee colony collapse disorder. This disorder is not well understood, and it is becoming a serious problem that could				

	result in reduced blueberry supply and higher prices. Although there is some uncertainty, native bees, like the common eastern bumble bee, can provide adequate pollination. However, increased native bee habitat management such as the planting of flowers, minimum mowing of grassy meadows, and less use of pesticides is required for the successful native pollination of blueberries. Failure to protect and manage native bee habitat may result in unsustainable crop production. Plants that provide food for wildlife, control erosion, and beautify the environment may also be lost if native bees are not supported. Wild blueberries, which are also called lowbush blueberries, grow naturally low to the ground and are small in size. Cultivated blueberries, also known as highbush blueberries, grow on larger bushes, and are significantly larger than wild blueberries.				
Directions	Please consider the options presented below for your next purchase of blueberries. Assume that the blueberries in each option are of equal quality in terms of ripeness, color, etc. Please rate each option on a scale of 1 to 5, with 5 indicating option(s) you would definitely purchase, and 1 indicating option(s) that you would definitely not purchase. The same rating may be used for more than one option. Please read all of the options before making your decisions.				
Section	Characteristics	Option A	Option B	Option C	Option D
Choices for rating	Price (\$/dry liter)	\$10.44	\$4.99	\$7.72	\$2.27
	Pollination method	Native bees	Native bees	Commercial honey bees	Commercial honey bees
	Type	Frozen	Fresh	Fresh	Frozen
	Where produced	In-state	Out-of-state	Out-of-state	In-state
	Variety	Wild	Wild	Cultivated	Cultivated
Consumer response	Rating (1 to 5)	<i>Rating for A</i>	<i>Rating for B</i>	<i>Rating for C</i>	<i>Rating for D</i>

^a These are “wild” bees/pollinators. Use of the word “native” is inaccurate, since feral (wild) honey bees are native to Africa and Europe.

Table S7 – Consumer willingness to pay survey for USA cranberry.

Section	Narrative
Description	Cranberries are often pollinated by commercial honey bees, but honey bee numbers have declined because of bee colony collapse disorder. For example, in 2012, about 30-40% of commercial honey bee colonies were lost throughout the United States. This disorder is not well understood, and it is becoming an increasingly serious problem that could result in reduced cranberry supply and higher prices. Although there is some uncertainty, native ^a bees, like the common eastern bumble bee, can provide adequate pollination. However, increased native bee habitat management such as the planting of flowers, minimum mowing of grassy meadows, and less use of pesticides is required for successful native pollination. Although native pollination may be more expensive, native pollination helps to insure sustainable cranberry production, security of food supply, and environmental quality in general. Cranberries products include cranberry sauce, fresh or frozen whole cranberries, muffins, cranberry bread, cranberry juice, dried cranberries, and cranberry jam.
Directions	Please answer questions after signing an oath (version 2) by typing your name into a text box: “I swear upon my honor to provide truthful and accurate answers during the entire survey.”
Number	Question
1	What is the maximum price increase you would pay (if any) for a \$2 cranberry product that is certified to be pollinated by native pollinators? [0% (\$2.00), 5% (\$2.10), 10% (\$2.20), 15% (\$2.30), over 15% (specify)]
2	What is the maximum price increase you would pay (if any) for a \$5 cranberry product that is certified to be pollinated by native pollinators? [0% (\$5.00), 5% (\$5.25), 10% (\$5.50), 15% (\$5.75), over 15% (specify)]
3	What is the maximum price increase you would pay (if any) for a \$10 cranberry product that is certified to be pollinated by native pollinators? [0% (\$10.00), 5% (\$10.50), 10% (\$11.00), 15% (\$11.50), over 15% (specify)]
4	On a scale of 1 to 10, how certain are you that you WOULD pay these prices for native pollination? [1 (not certain), 2, 3, 4, 5, 6, 7, 8, 9, 10 (very certain)]
5	If you answered \$0 for any questions (you are not willing to pay more), is it due to:
	I did NOT answer \$0 for any of the questions.
	I support the cause, but I cannot afford the increase in price.

	I am unsure that native pollination will have an impact on cranberry production sustainability.
	I do not use any products that contain cranberries to my knowledge.
	I am not worried about the potential problems associated with commercial pollination.
	Other (elaborate).
6	On a scale of 1 to 5, how often do you read the ingredients label on products that you purchase? [1 (never), 2 (rarely), 3 (sometimes), 4 (often), 5 (always)]
7	Have you read or heard anything about the commercial honey bee colony collapse disorder before this survey? [Yes, No]
8	Do you feel you were well informed about commercial bee problems before this survey? [Yes, No]
9	Which statement best describes your views on climate change?
	Climate change does not exist.
	Climate change is a small problem.
	Climate change is a moderate problem.
	Climate change is a large problem.
	Nothing can be done to alter climate change.
10	How many children do you have? [0, 1, 2, 3, more than 3]
11	Ethnicity: [Black, Hispanic, Asian, Native American, White/Other]
12	Gender: [male, female, transgender/other]
13	Which of the following age groups are you in? [18–24, 25–34, 35–44, 45–54, 55–64, 65 or older]
14	Which is your approximate household annual income before taxes? [<\$15,000, \$15,001–\$30,000, \$30,001–\$45,000, \$45,001–\$60,000, \$60,001–\$85,000, \$85,001–\$110,000, >\$110,001]

^a These are “wild” bees/pollinators. Use of the word “native” is inaccurate, since feral (wild) honey bees are native to Africa and Europe.



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