7 Blueberry II

Where: Grand Gallery Room A & B
MI Recertification Credits: 2 (1C, COMM CORE, PRIV CORE)
CCA Credits: CM (1) PM (1)
Moderator: Steve Hunt, MSHS Trust Committee, Grand Junction, MI

2:00 PM **Birds and Blueberries, What Can Be Done?**
- Catherine Lindell, Michigan State University

2:20 PM **Tough Times Never Last - Tough Farm Families Do!**
- Andy Junkin, Agriculture Strategy

2:50 PM **Green Fruit or Draper Drop**
- Eric Gerbrandt, British Columbia Blueberry Council

3:10 PM **Blueberry Pollination**
- Rufus Isaacs, Michigan State University

3:30 PM **USHBC Positively Bluetiful Marketing Efforts for You**
- Victoria De Bruin, USHBC/NABC

3:50 PM **Michigan Blueberry Commission Update and Grower Think Tank**
- Kevin Robson, Michigan Farm Bureau

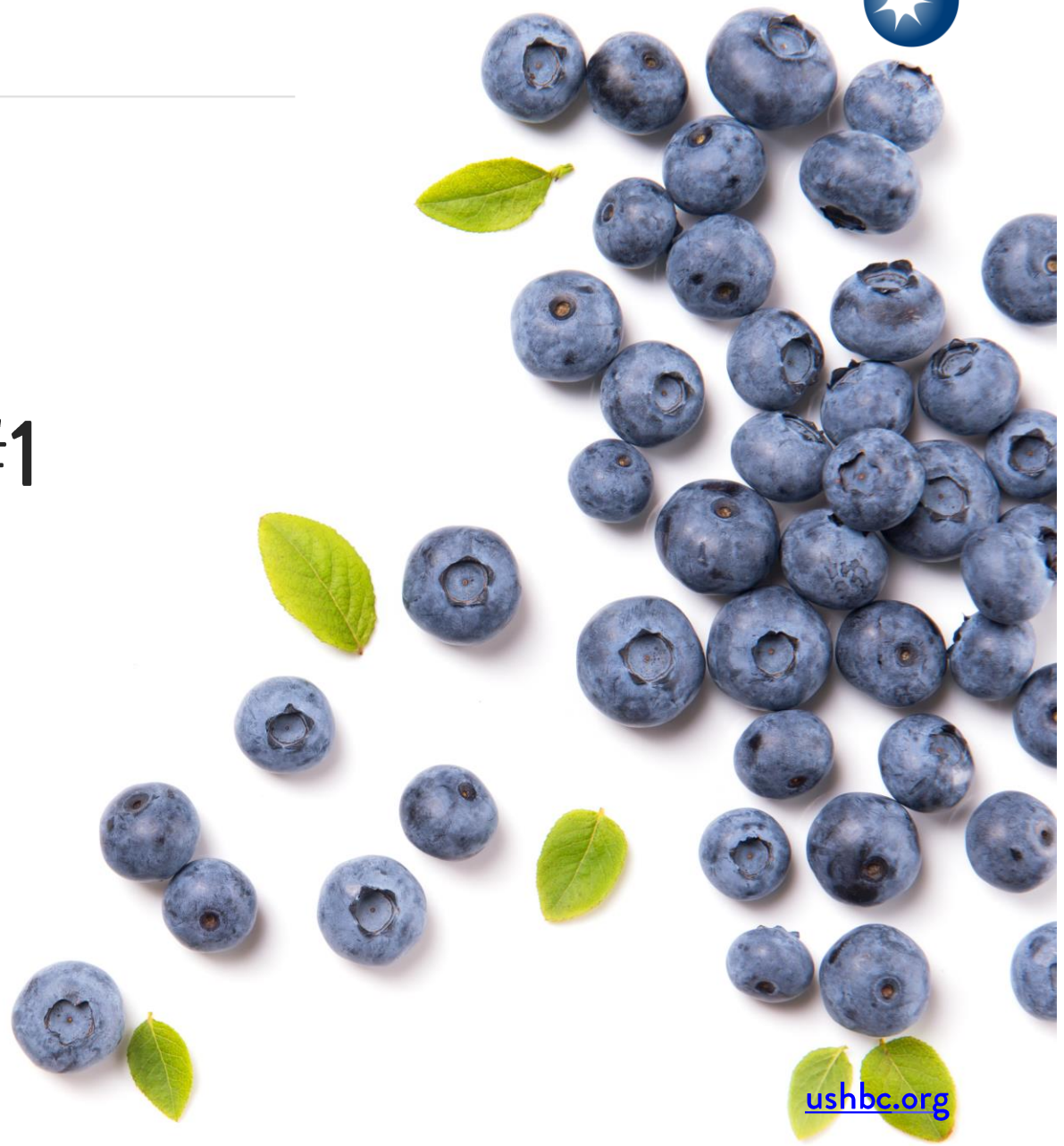
4:00 PM **Session Ends**

U.S. Highbush Blueberry Council

ushbc.org

2017 U&A Study

Blueberries were ranked the #1 preferred berry



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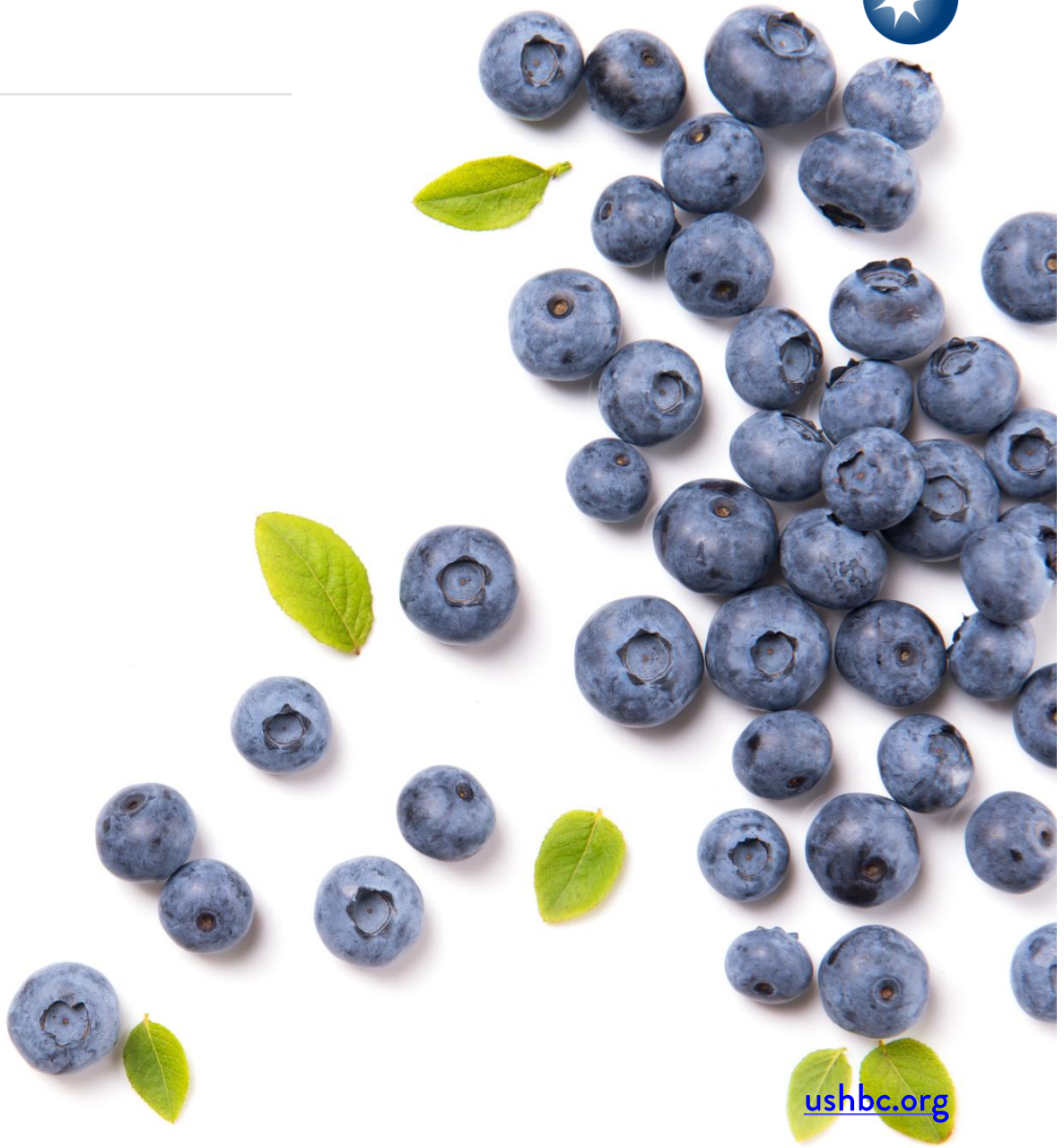
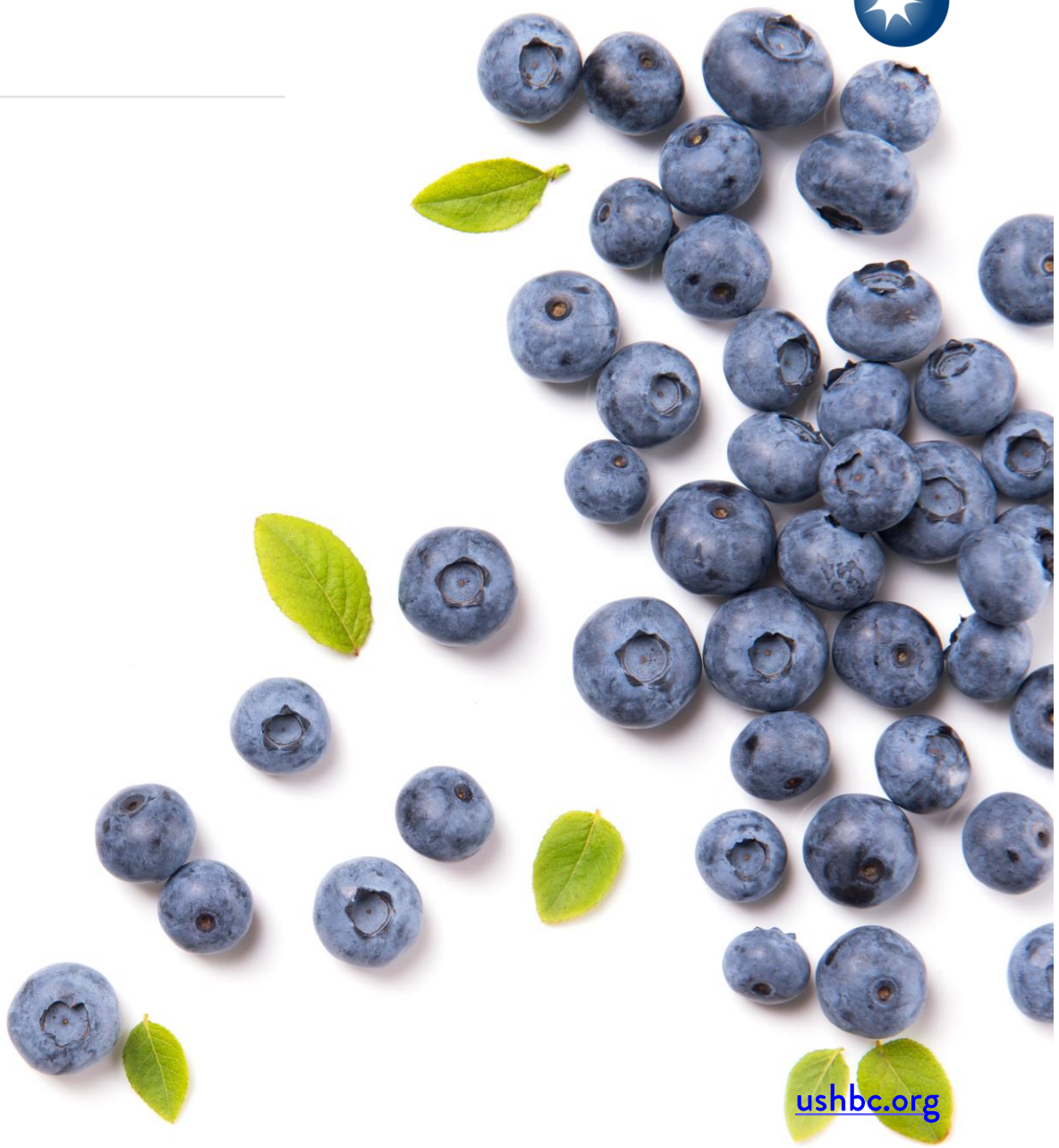
2017 U&A Study

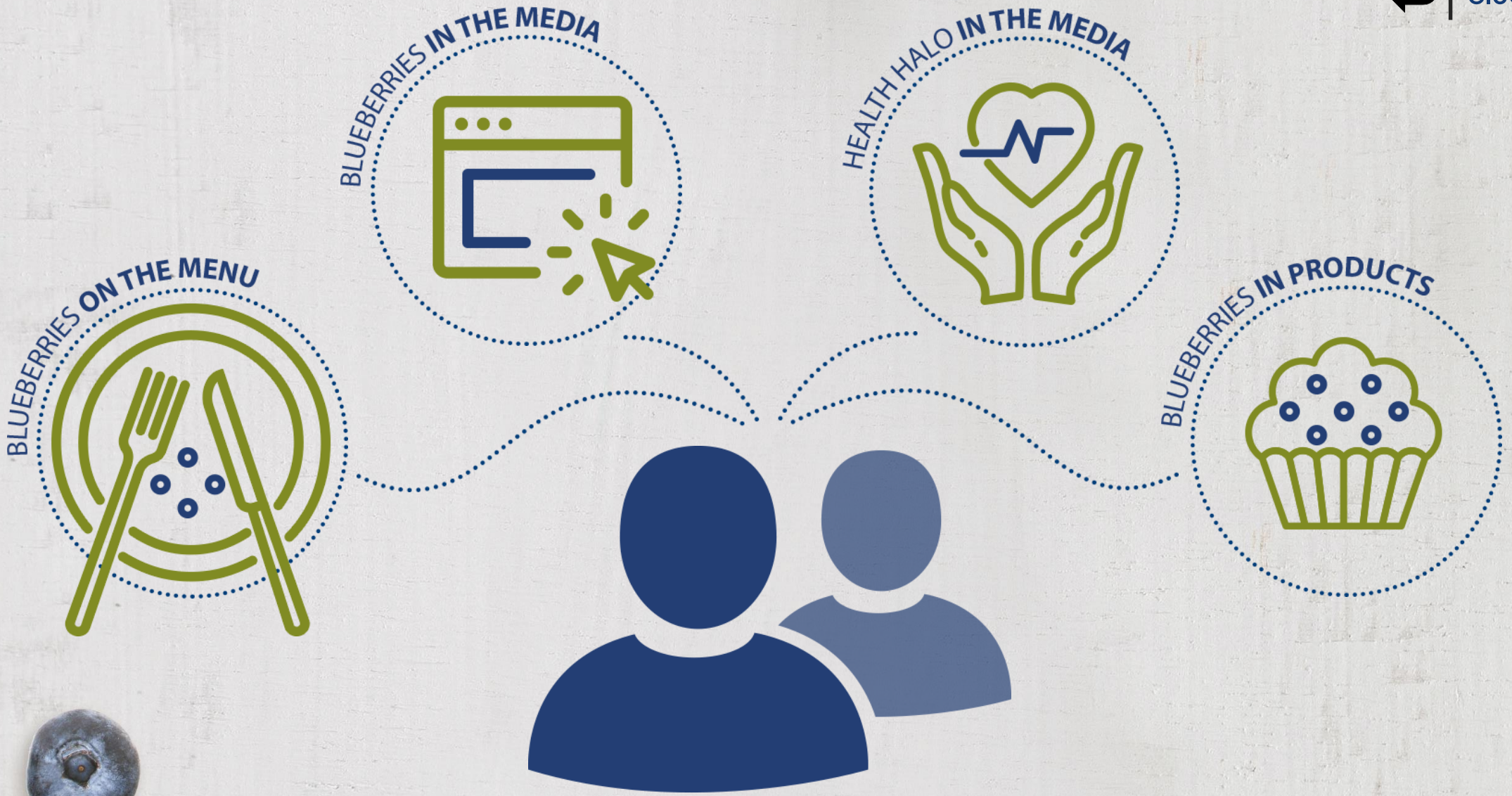
- Purchase intent at very likely is up 10% from 2013
- 75% are on the pathway to purchase blueberries



2013-2017: IRI Data

- Fresh volume sales are up 27%
- Fresh dollar sales are up 34%
- Per capita fresh sales are up 26%.





MODERATE MARK/MANDY &
HEAVY HANNA/HARRY

Consumer Audience Strategies

Marketing Imperative

- Promote blueberries year round
- Promoting mainly fresh in consumer campaign

Strategies

- Digital Advertising
- Celebrity and health influencers
- Shareable online content
- Media coverage

2018 Positively Bluetiful Digital Advertising Campaign

Video and Banner Ad Results

- Exceeding all goals (video views, clicks and engagements)
- Ads performing above all industry benchmarks

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Celebrity & Health Influencer Partnerships

Partner with lifestyle, food and health professional influencers to drive blueberry health benefits, recommendations, buzz & engagement on social media year round

- Dietitians
- Fitness experts
- Media personalities: Brandi Milloy

Consumer Media

TODAY

Eating for brain health: What women need to know about diet and Alzheimer's

Women have a greater probability of developing Alzheimer's than men. Making certain diet changes could help keep the brain healthy.

by Kristin Kirkpatrick / Jun.04.2018 / 11:34 AM ET / Source: TODAY Contributor

NBC NEWS BETTER

FREEZE DRIED BLUEBERRIES

Trader Joe's has an amazing selection of freeze-dried fruits, which are great for snacking or tossing into whole grain cereals and trail mixes. The freeze dried blueberries stand out to Patricia Bannan, MS, RDN, author of "Eat Right When Time is Tight." "They're a sweet treat that deliver the same nutrients as fresh or frozen blueberries for about 80 calories a cup," she says.

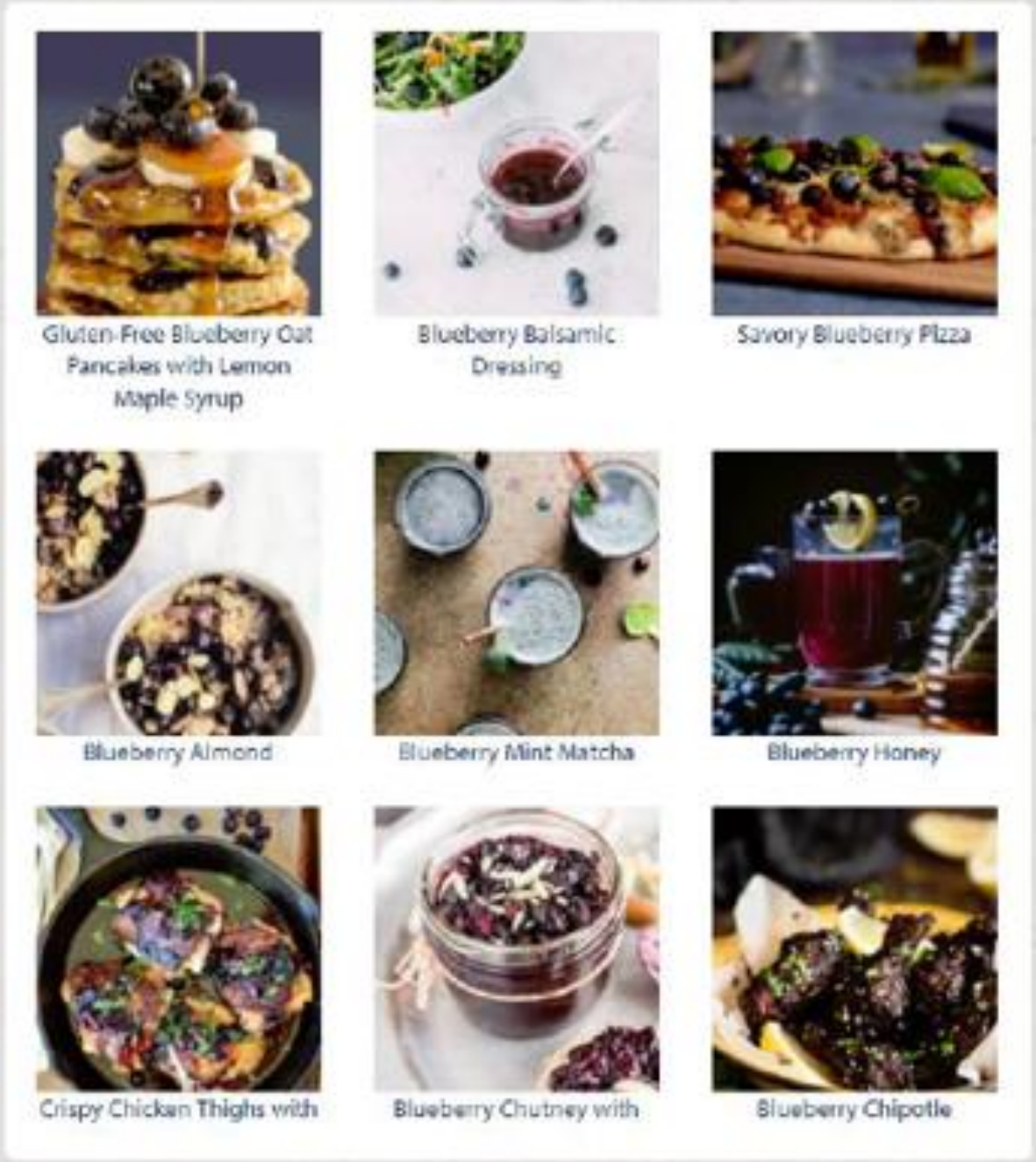
GOOD HOUSEKEEPING

POPSUGAR.

Frozen Blueberries

"Frozen blueberries are one of my favorite healthy sweet treats and are a great addition to smoothies and pancakes. Frozen blueberries are flash-frozen at peak ripeness, which means they retain many of their nutrients and have a pleasant sweetness. Frozen blueberries provide fewer than 100 calories per cup and four grams of fiber. In addition, blueberries are a rich source of anthocyanins, which are groups of phytochemicals that appear to help protect the heart, brain, and reduce inflammation. Look for frozen blueberries without added sugar for the most nutritious choice." – Edwina Clark

- 152 media placements, totaling 1.8 billion in reach.
- 86% of the coverage includes a health message.
- Coverage on the Today Show, CNN, Good Housekeeping, Prevention and Healthline



Sharing Online Content

Social Media

- Online shareable content to drive awareness & word of mouth through Facebook, Instagram, Twitter, YouTube and blogs.

Websites

- SEO: Ads reaching 300,000 consumers via Google, Bing & Yahoo
- Email marketing campaign reaching 13,000 subscribers
- Recipes most popular reason to visit

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Leading the Way to New Blueberry Product Inspiration

Expand and open up new USA and international markets for food and non food uses of processed blueberries.

Strategies

- Inspire the use of blueberries through publicity, advertising, trade shows, e news, website and blog
- Support food scientists with technical assistance
- Encourage the use of real blueberries in products

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BIRDS AND BLUEBERRIES: WHAT CAN BE DONE?

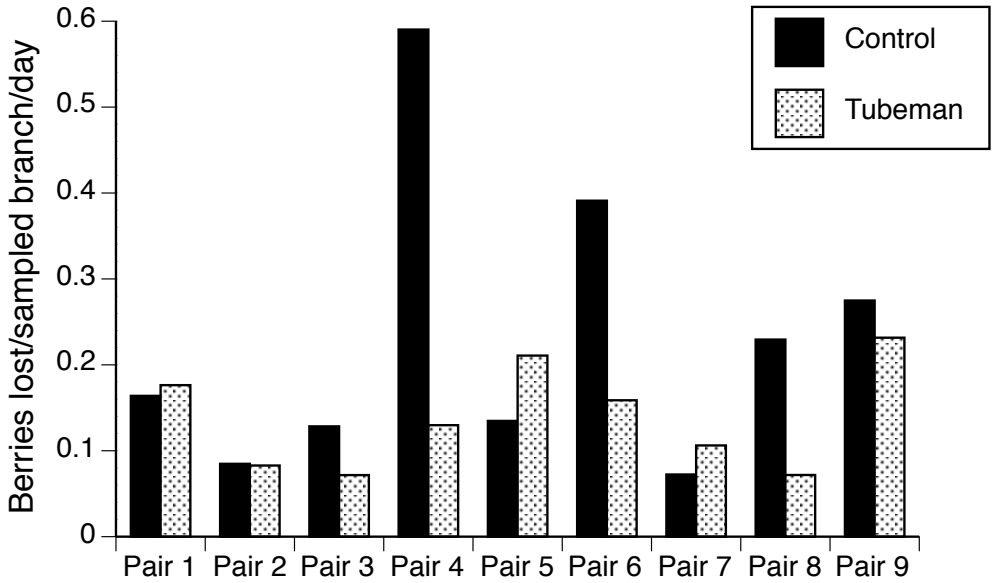
Catherine Lindell
Michigan State University Department of Integrative Biology and Center for Global Change and Earth Observations, 1405 S. Harrison Rd., East Lansing, Michigan 48823, lindellc@msu.edu

Bird management strategies overview

Bird management strategies can be grouped into several categories: 1) scaring, 2) barriers, 3) cultural management practices, for example encouraging natural predators, 4) deterrent sprays 5) lethal control and 6) more recently, interfering with birds' perception of their environments.

1. Scaring. Birds habituate quickly to sounds and visual devices that are supposed to scare them. Simply placing decoys of predators or scare-eye balloons is not likely to deter birds for long. If one employs scaring devices, they should be deployed early in the season. Also, they are more likely to deter birds if there is some random component to their movement or sound. For example, *inflatable tubemen* should be moved within or around a block and, ideally, go on and off randomly (although one needs to be careful that they do not get caught in the crop when they stop running). Results from a test we conducted with tubemen in 2013 and 2014 are in Figure 1, showing there is not a strong, consistent deterrent effect of tubemen although they may reduce some fruit-eating bird activity in some contexts. Propane cannons and devices that play recordings of distress calls or predator calls can be programmed to go on and off randomly. Some scaring strategies, like lasers, work in particular situations. For example, lasers deter Canada geese in low-light situations. Effigies (dead birds hung in the crop) may deter crows.

Figure 1. Berries lost to fruit-eating birds in Michigan blueberry blocks in 2013 and 2014. Blocks were in pairs; one member of the pair was a control block and one member had 1-2 tubemen "dancing" for about 10 hours per day.



Unmanned aerial systems (i.e. drones), preliminary study in Michigan sweet cherries.

In a preliminary study of the potential of unmanned aerial systems, i.e. drones, to deter birds in fruit, we conducted observations during 2018 at four sweet cherry orchards, two in Leelanau County and two in Grand Traverse County. We worked with Peter Baumeler and Fred Page, who operated the drone, while our field assistant, Naomi Barnes, conducted observations of fruit-eating bird activity during three periods: a 15-minute pre-drone period before the drone was flown, a 15-minute period when the drone was flying, and a 15-minute post-drone period, after the drone had flown. We repeated this sequence of observation periods at the four orchards on a number of days before harvest and a few days after harvest. The observations sometimes revealed the results we expected (see Figure 2 below) with lower fruit-eating bird numbers during the periods when the drones were active compared to the pre- and post-drone periods. However, sometimes the results were not what we expected (Figure 3), with fruit-eating bird numbers fluctuating with no apparent pattern during the pre-drone, drone, and post-drone periods. Tests at a larger number of sites would be helpful in determining when drones are likely to deter birds. The Michigan Horticultural Society funded this study.

Figure 2. Fruit-eating bird numbers in a sweet cherry block before we deployed a drone (pre-drone period), during drone deployment (drone period) and after we stopped flying the drone (post-drone period). Leelanau County, 2018.

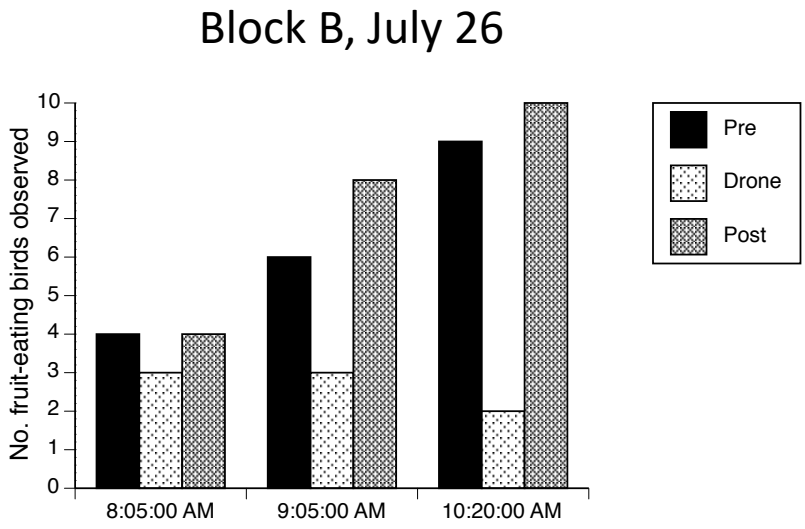
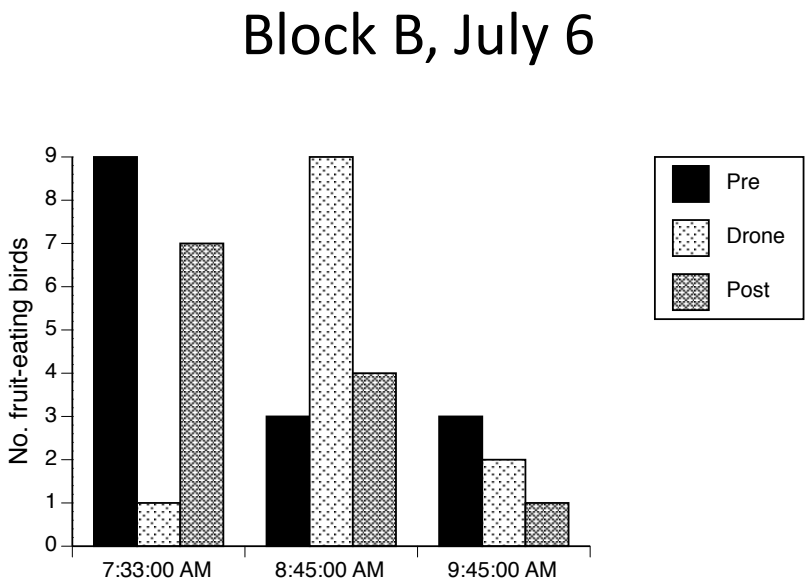


Figure 3. Fruit-eating bird numbers in a sweet cherry block before we deployed a drone (pre-drone period), during drone deployment (drone period) and after we stopped flying the drone (post-drone period). Leelanau County, 2018.



2. Barriers. Many growers use netting to deter birds; it was considered the most effective bird deterrent in a survey of 1500 fruit-growers (Anderson et al. 2013). Netting requires considerable effort and materials and is generally only a reasonable strategy for low-stature, high-value crops. If one employs netting, it is important that the netting enclose the vulnerable fruit. Birds will easily get under the netting if there is a gap left between the bottom of the netting and the ground. Also, ideally, the netting will be on a frame to maintain some distance between the fruit and the netting. If the netting lies on the fruit, birds will simply reach the fruit through the netting.

3. Increasing resources for predators of birds. American kestrels, small predatory birds, can be attracted to orchards with nest boxes. Kestrels prey on insects, small mammals, and birds and we have good evidence that they deter pest birds in Michigan sweet cherry orchards (Shave et al. 2018). At the end of this hand-out are links to plans for building nest boxes and points about the best locations and maintenance of boxes. An important consideration is that kestrels eat voles and mice, so rodenticides should not be used in orchards when kestrels are present. Kestrels migrate out of the northern lower peninsula of Michigan in August but some kestrels may stay in the southern lower peninsula year-round. As a final point, our research shows that consumers are enthusiastic about this type of bird management and so informing your customers about your use of predator nest boxes for pest reduction may be valuable in marketing (Herrnstadt et al. 2016).

Update on American kestrel project in western Michigan. We installed 32 American kestrel nest boxes in western Michigan blueberry fields from 2015-2018. Each year, 30-35% of the

boxes have been occupied by kestrels. This rate is lower than the 80-90% box occupancy we have documented in Michigan sweet cherry orchards over the last few years. The difference in occupancy may result from the more open nature of cherry orchards compared to blueberry fields and greater amounts of short, grassy areas in Leelanau County compared to western Michigan.

Each year from 2016 through 2018, the majority of the occupied boxes (82-100%) in western Michigan blueberry fields successfully fledged young kestrels, averaging between 3 and 4 fledglings per box. Results regarding whether fruit-eating bird activity is lower in blueberry blocks with active kestrel nests are pending.

Of those boxes without kestrels in blueberry fields, many were occupied by European starlings, an invasive species that can be a pest in blueberries. (We rarely find starlings nesting in kestrel boxes in Leelanau County sweet cherry orchards). Because the European starling is not a native protected species, we could remove the nests from the boxes before they produced young. Later in the summer, many of the kestrel boxes were used by Eastern bluebirds for nesting. Bluebirds are native, eat many insects, and have been shown to be helpful in reducing numbers of insects in vineyards in California. So, they can be considered a beneficial bird in fruit-production regions.

4. Deterrent sprays. Bird deterrent sprays (there are several on the market) contain methyl anthranilate because it is the only chemical currently allowed for use on fruit. Methyl anthranilate is also a food additive that imparts a fruity odor to products. The method of action of methyl anthranilate is that it irritates the trigeminal nerve in the bill of birds. Generally, tests of the efficacy of methyl anthranilate products have not produced strong evidence that it deters birds in field situations. If sprays containing methyl anthranilate are used, they should be applied following the label as closely as possible to increase the likelihood of effectiveness. For example, bird deterrence may be improved if they are applied with foggers, which produce smaller droplets, than typical sprayers. Also, the sprays need to be reapplied after it rains.

5. Lethal control. Although potentially appealing, lethal control doesn't have a strong track record for reducing bird damage although it may be warranted in specific contexts. Whether or not one needs a permit to kill pest birds depends on the bird species and the context. Please see the following MSU extension article for regulations concerning permits: https://www.canr.msu.edu/news/do_i_need_a_permit_to_control_wildlife_on_my_farm.

6. Interfering with birds' perception of their environments. Recent developments in bird management impair birds' abilities to perceive their environment and may have applicability in fruit-production systems. "Sonic nets", for example, broadcast noise at the same frequencies at which birds communicate, so potentially interfering with birds' ability to warn each other about danger. One test showed that the nets deterred birds from an airfield. Preliminary studies of "laser scarecrows", where a laser beam sweeps over a field, show some promise in reducing bird activity in sweet corn. By reducing birds' abilities to communicate and perceive predators, these techniques may be less susceptible to habituation than scare techniques.

Anderson, A., C. Lindell, K.M. Moxcey, B. Siemer, P. Curtis, J. Carroll, C. Burrows, J. Boulanger, K. Steensma and S. A. Shwiff. 2013. Bird Damage to Select Fruit Crops: The Costs of damage and the benefits of control in Five States. *Crop Protection* 52:103-109.

Herrnstadt, Z., Howard, P.H., Oh, C.-O. Lindell, C.A. 2016. Consumer Preferences for 'Natural' Agricultural Practices: Assessing Methods to Manage Bird Pests. *Renewable Agriculture and Food Systems.* 6(1):516-523

Shave, M.E., S.A. Shwiff, J.L. Elser and C.A. Lindell. 2018. Falcons using orchard nest boxes reduce fruit-eating bird abundances and provide economic benefits for a fruit-growing region. *Journal of Applied Ecology* 55:2451-2460. DOI: 10.1111/1365-2664.13172

Building, Installing and Monitoring American Kestrel Nest Boxes* Plans for the "Spartan" kestrel nest box and mounting tower (designed by Tom Comfort) can be found here: http://www.nestboxbuilder.com/nestbox-article-spartan.html. Additional plans for a simple kestrel nest box can be found here: 1) https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_063830.pdf 2) https://nestwatch.org/learn/all-about-birdhouses/birds/american-kestrel/. Boxes should be installed away from wooded areas to reduce the risk of occupancy by European starlings. Open habitat with sparse trees/shrubs is desirable. Boxes mounted on their own poles/towers can be installed within the orchard itself, either at the end of a row or within a row in an open spot if there is a missing plant. Boxes should be installed at least one-half mile apart to allow for kestrel territoriality. Boxes should be installed 10 – 20 feet from the ground. The box entrance should face the southeast; kestrel nests are more likely to produce young from boxes facing southeast. Kestrels do not build nests, so the bottom of nest boxes should be lined with wood shavings or animal bedding. Boxes that were occupied during the summer should have the wood shavings replaced during the following fall/winter or early spring in preparation for the next breeding season. If a European starling occupies a box, it will add grass and other materials to the box and lay 5 – 7 pale blue eggs. An identified starling nest should be removed from the box, and new wood shaving should be added to the box if needed. European starlings are not native to North American so no permits are needed to remove their nests. Please consider contributing to the nationwide kestrel nest box monitoring effort by registering your boxes with the American Kestrel Partnership. You can get started here: http://kestrel.peregrinefund.org/begin-obs

Acknowledgments.
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