

POLLINATORS AND ART IN THE CLASSROOM

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Natural Resource Specialist

John Day – Willow Creek Project

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THE NATIONAL STRATEGY TO PROMOTE THE HEALTH OF HONEY BEES AND OTHER POLLINATORS

1. Reduce honey bee overwintering colony losses to no more than 15% within 10 years
2. Increase the Eastern population of the monarch butterfly to 225 million butterflies occupying an area of approximately 15 acres in the overwintering grounds in Mexico
3. Restore or enhance 7 million acres of land for pollinators over the next 5 years.





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PUTTING FOOD ON OUR TABLES

A SAMPLING OF CROPS DEPENDENT UPON OR BENEFITED BY INSECT POLLINATION

Fruits and Nuts:

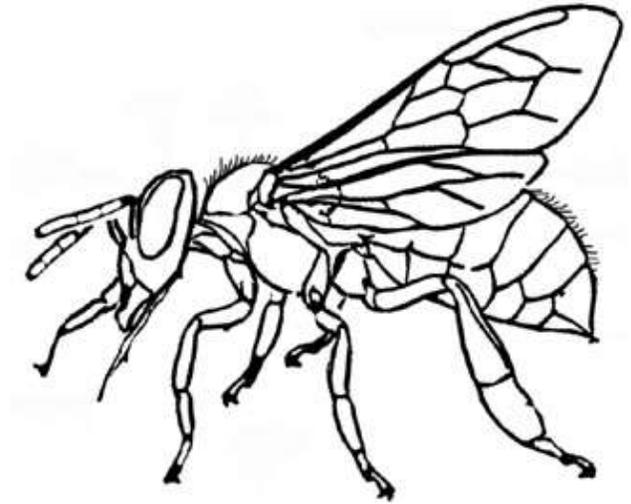
Apple	Chestnut	Macadamia	Peach
Apricot	Coconut	Cacao	Nectarine
Crabapple	Oil Palm	Olive	Pear
Cashew	Date	Cherry	Plum
Fig	Papaya	Passion fruit	Kiwi
Pomegranate	Strawberry	Raspberry	Cranberry
Blackberry	Blueberry	Gooseberry	Grapes

Vegetables:

Artichoke	Asparagus	Balsam Pear	Beet
Broccoli	Brussels Sprouts	Cauliflower	Carrot
Celery	Chicory	Cucumber	Chive
Eggplant	Leek	Green Pepper	Parsnip
Pumpkin	Squash	Rutabaga	Tomato
Turnip	Watermelon	White Gourd	Radish

Others:

Coffee	Dill	Parsley	Lavendar
Black Pepper	Mustard	Sunflower	Vanilla
Sesame	Nutmeg	Fennel	Guava



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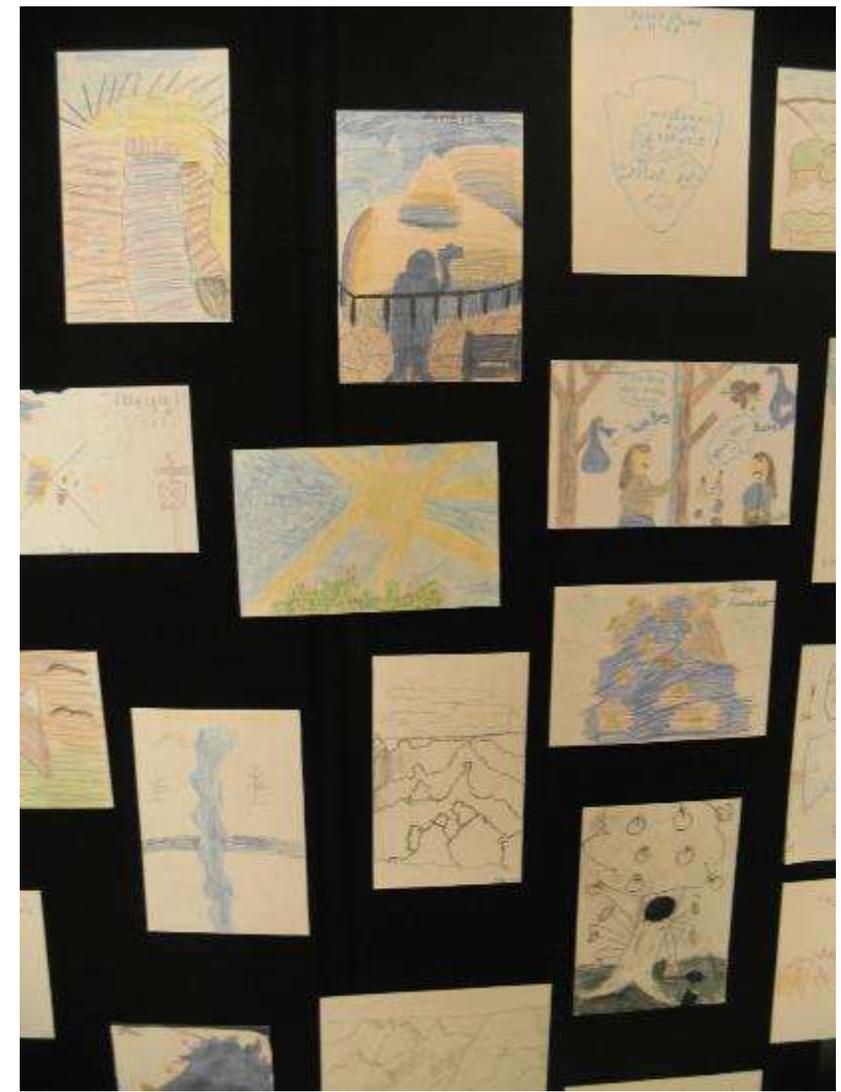
GRAND CANYON ART EXHIBIT



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THE ARTS PREPARE STUDENTS FOR SUCCESS IN SCHOOL.

- Boosts literacy, fine motor and English Language Arts (ELA) skills. Arts education helps students become better readers and writers. Drama instruction, for example, increases reading readiness and word fluency in early grades and continues to improve reading comprehension and writing skills throughout middle and high school. When the arts are integrated with literacy instruction, all students benefit, especially English Language Learners and students from low-income backgrounds.
- Engages students in school and motivates them to learn. Arts education helps make learning matter to students by giving them a medium to connect new knowledge to personal experiences and express what they have learned to others. Students who are typically disengaged in school are more likely to participate in arts and arts integrated classes than in classes where the arts are absent, and students who receive arts integrated instruction have higher attendance than those who do not.
- Develops critical thinking. In a world where students must frequently wade through a sea of information to determine which facts are trustworthy and relevant to a particular topic, critical thinking skills are key to college readiness and lifelong learning. Arts education develops students' critical thinking skills—including skills for comparing, hypothesizing, critiquing, and exploring multiple and alternative viewpoints.
- Improves school culture. Arts education helps foster a positive culture and climate in schools. When schools integrate the arts across the curriculum, disciplinary referrals decrease while effectiveness of instruction and teachers' ability to meet the needs of all students increase. Arts integration also contributes to increasing teacher satisfaction and lowering teacher turnover rates, often challenges for low performing schools.

<http://www.aep-arts.org/wp-content/uploads/2013/04/Preparing-Students-for-the-Next-America-FINAL.pdf>



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THE ARTS PREPARE STUDENTS FOR SUCCESS IN **WORK**.

- Equips students to be creative and inventive. Arts education develops creativity, one of the top five skills employers prize for the 21st Century. Students receiving an arts-rich education perform better on assessments of creativity than do students receiving little or no arts education. Performing arts students, for example, show greater flexibility and adaptability in thinking than their peers.
- Strengthens problem solving ability. The arts develop reasoning skills that prepare students to solve problems. Students who study the arts, for example, score higher than their peers on tests measuring the ability to analyze information and solve complex problems, and are more likely to approach problems with patience and persistence.
- Builds collaboration and communication skills. In the arts, students learn to articulate their intentions, receive and offer constructive criticism, and listen actively to others' ideas. Art making allows students to experience what it feels like to be active members of a community and to work as a team to determine and achieve common goals.
- Increases capacity for leadership. Students who participate in the arts develop leadership skills, including decision-making, strategy building, planning, and reflection. They also prepare to use these skills effectively by developing a strong sense of identity and confidence in their ability to affect the world around them in meaningful ways.

<http://www.aep-arts.org/wp-content/uploads/2013/04/Preparing-Students-for-the-Next-America-FINAL.pdf>



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THE ARTS PREPARE STUDENTS FOR SUCCESS IN LIFE.

- Facilitates cross-cultural understanding. Arts experiences foster pro-social behaviors and social tolerance that help prepare students for life in an increasingly global and culturally diverse world. Ensemble performance, community mural painting, and other group arts experiences in which participants are from diverse backgrounds demonstrate particular value for developing cross-cultural understanding.
- Strengthens perseverance. Arts education develops students' capacity to persist in the face of a challenge. Through arts study, students improve in their ability to turn barriers into opportunities, overcome difficulty in completing complex tasks, and sustain attention. In a longitudinal study of 25,000 secondary school students, those with higher involvement in the arts scored better on measures of persistence than their peers with lower arts involvement.
- Builds community and supports civic engagement. Arts programs foster a sense of community among participants that supports their personal, artistic, civic, and social development. They also offer a vehicle for effecting change in the surrounding community. Students who have had an arts-rich education volunteer more often and exhibit greater civic engagement than other students.
- Fosters a creative community. Students who study the arts in their school years are more likely to engage with the arts in later life as consumers, performers, or creators than their peers who receive no arts education. Additionally, researchers find that the more art forms students study, the greater their arts participation in adulthood.

<http://www.aep-arts.org/wp-content/uploads/2013/04/Preparing-Students-for-the-Next-America-FINAL.pdf>



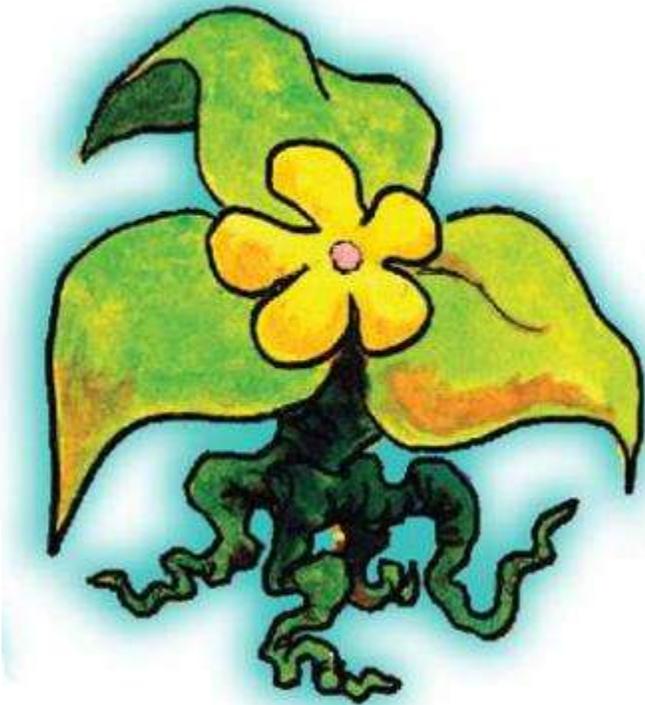
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Pollinator Partnership

<http://pollinator.org/nappc/PDFs/curriculum.pdf>





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Design Your Own Flower

Fill out your preferences and give them to your partner:

Your favorite color:

Your favorite shape:

A smell you like:

Your favorite snack:

Imagine you are a flower adapting to your partner's preferences. In the area above, draw a "designer" flower to suit these preferences. Then, describe why the flower you created would appeal to your partner.

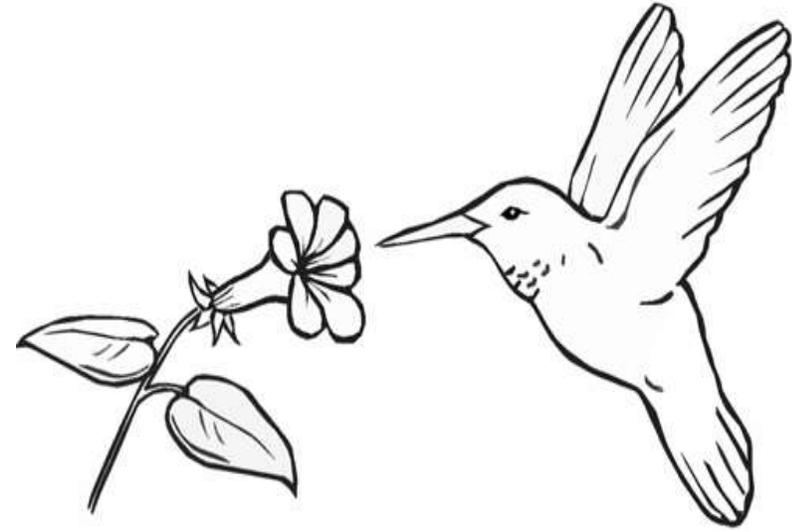


DESIGNING A POLLINATOR

As you create your new pollinator and its Favorite flower, think about their sizes and shapes and where the pollen is located on the flower.

Describe your new pollinator:

- Its life cycle (For example, a butterfly goes through 4 life stages.)
- Habitat (Does it live in the woods? Near an ocean? Near the ground? In the treetops?)
- Lifestyle (When does it fly and feed?)
- How it eats
- How it carries pollen
- Other features



Note how the shape of this hummingbird's beak and head is a perfect match to this trumpet-shaped flower.



BRAND NEW SPECIES OF FLOWERS AND POLLINATORS!!!

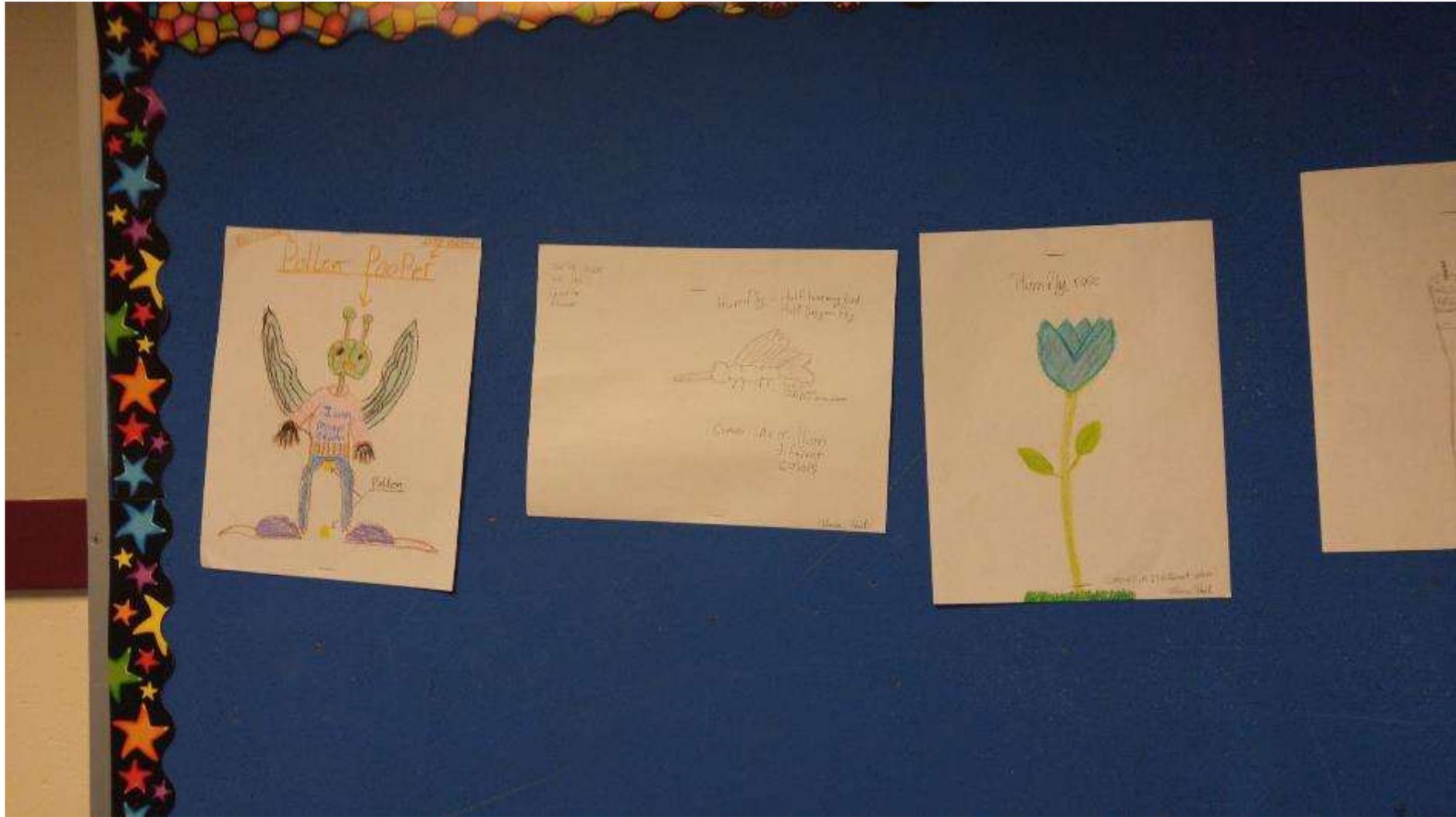




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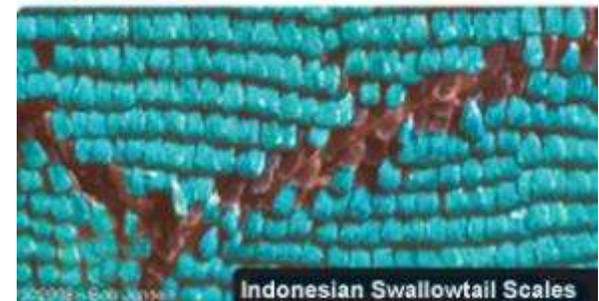
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BUTTERFLY ADAPTATIONS



Orchard butterfly tongue.



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BAT – SAGUARO CACTUS RELATIONSHIP

For use as final slides or with large images for added prominence

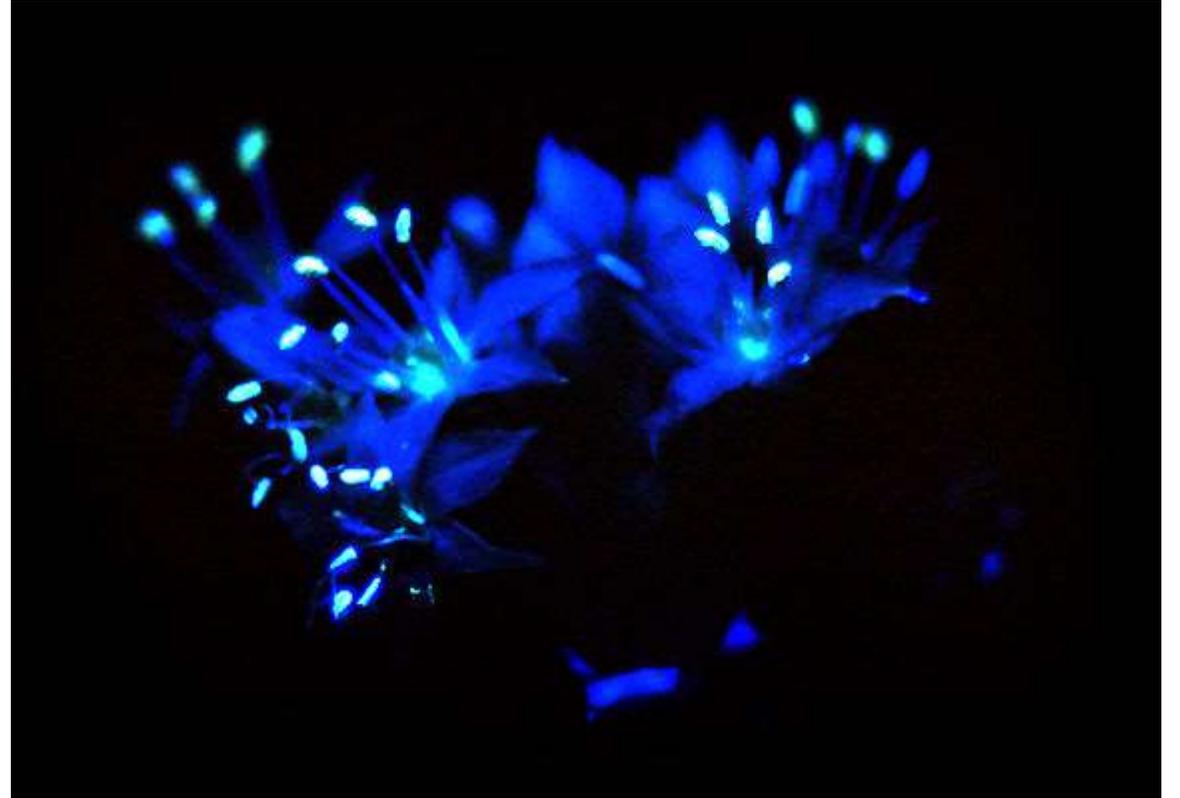




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BEE'S SEE ULTRAVIOLET LIGHT



BEE'S EYE



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KUDZU



Winter



Spring



Mid-Summer



Early Fall



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MORE AND MORE RELIANCE ON MANAGED HIVES.



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WE NEED A LOT OF BEES!!!

California almond crop – 1,500,000 hives

New York apple crop – 30,000 hives

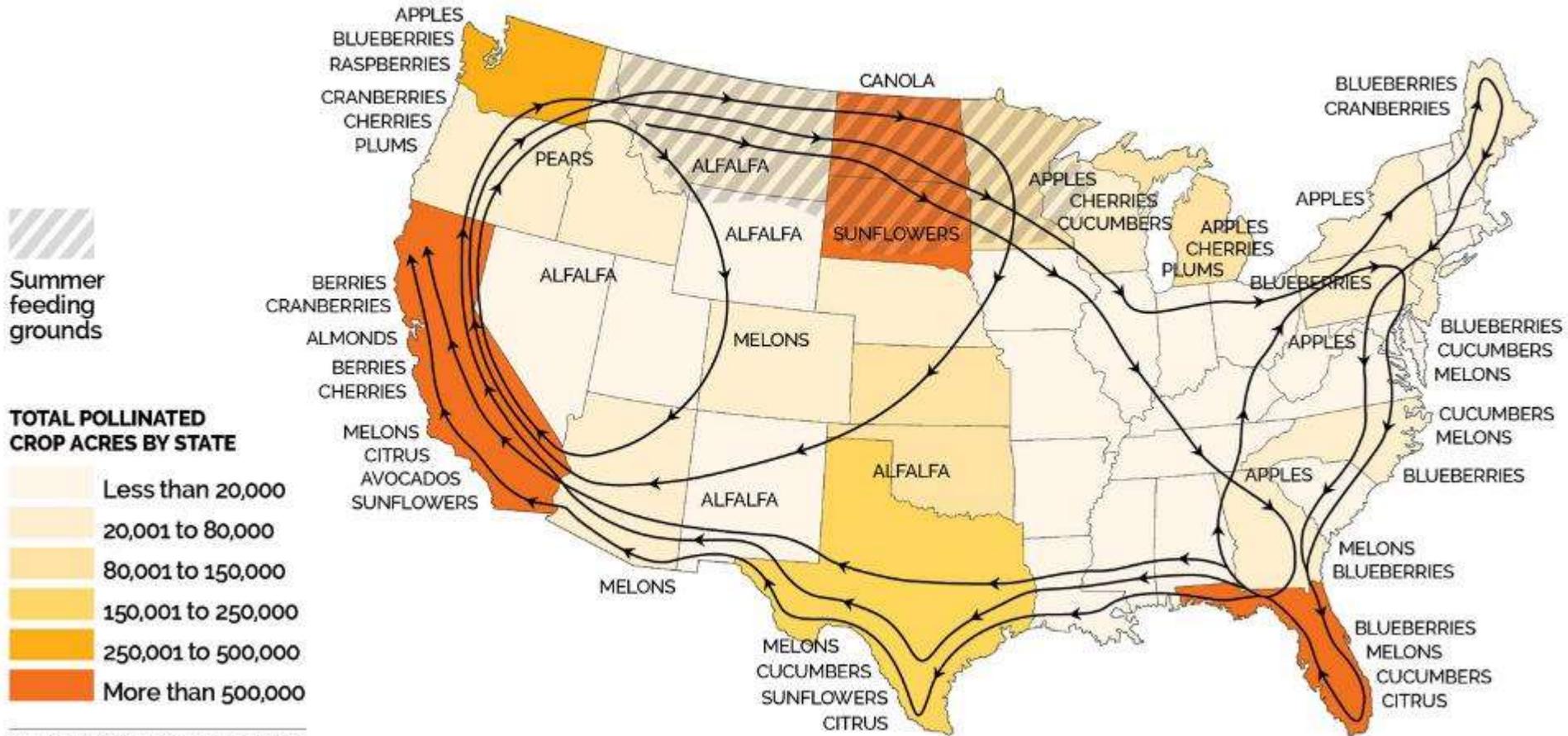
Maine blueberry crop – 50,000 hives

Washington cherry crop – 60,000 hives

Georgia cucumber crop – 30,000 hives



Pollinator Movements in the United States



Source: USDA Economic Research Service, 2014



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LYLE MIDDLE SCHOOL PLANTING A POLLINATOR GARDEN.





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PYMATUNING STATE PARK



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CHARLES MILL LAKE



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Thank you!!

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Talk about how this program has morphed into a program for older grades, high schoolers to teach them about interpretation and thereby being able to present the pollinator program to younger classes, earth day events, kindergarten, and this here for you all



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