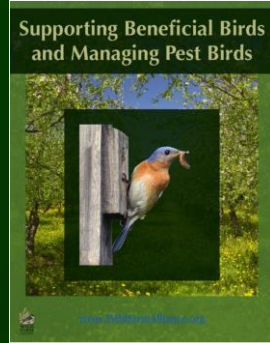


SUPPORTING BENEFICIAL BIRDS AND MANAGING PEST BIRDS

A companion webinar to the
Wild Farm Alliance guide



Jo Ann Baumgartner
Wild Farm Alliance
@WFA_WildFarm



Dr. Sacha Heath
Living Earth Collaborative
@sachaheath



Dr. Sara Kross
Columbia University
@wildfarms

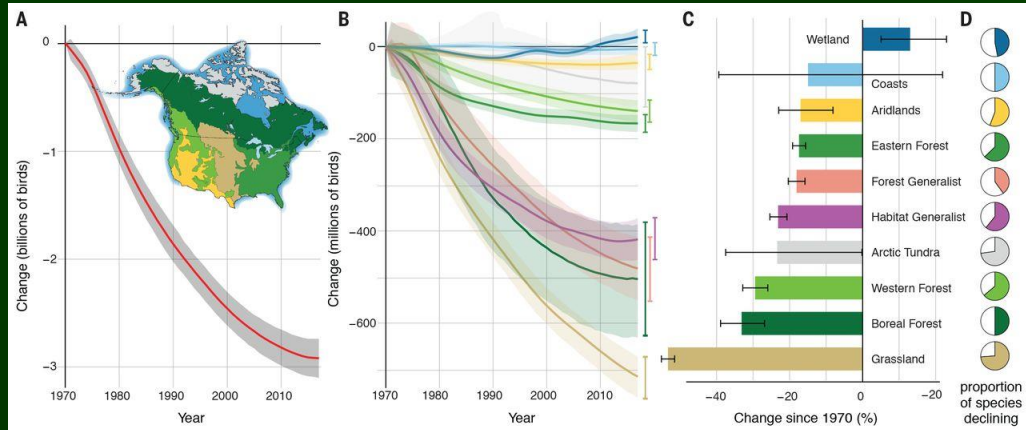


Outline

- Introduction (5 min)
- Bird foraging and life history traits (10 min)
- Habitat (10 min)
- Managing and co-existing with birds (10 min)
- Making farms bird friendly (20 min)
- Conclusions (5 min)

Decline of the North American avifauna

Kenneth V. Rosenberg, Adriaan M. Dokter, Peter J. Blancher, John R. Sauer, Adam C. Smith, Paul A. Smith, Jessica C. Stanton, Arvind Panjabi, Laura Helft, Michael Parr, and Peter P. Marra



Copyright © 2019, American Association for the Advancement of Science

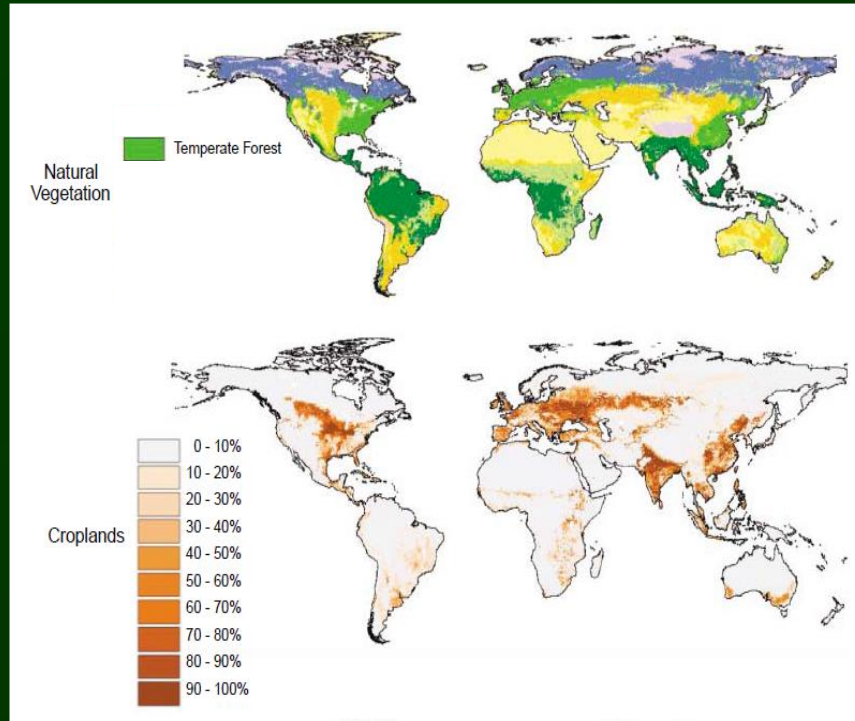
Science
AAAS

Agricultural expansion
and intensification

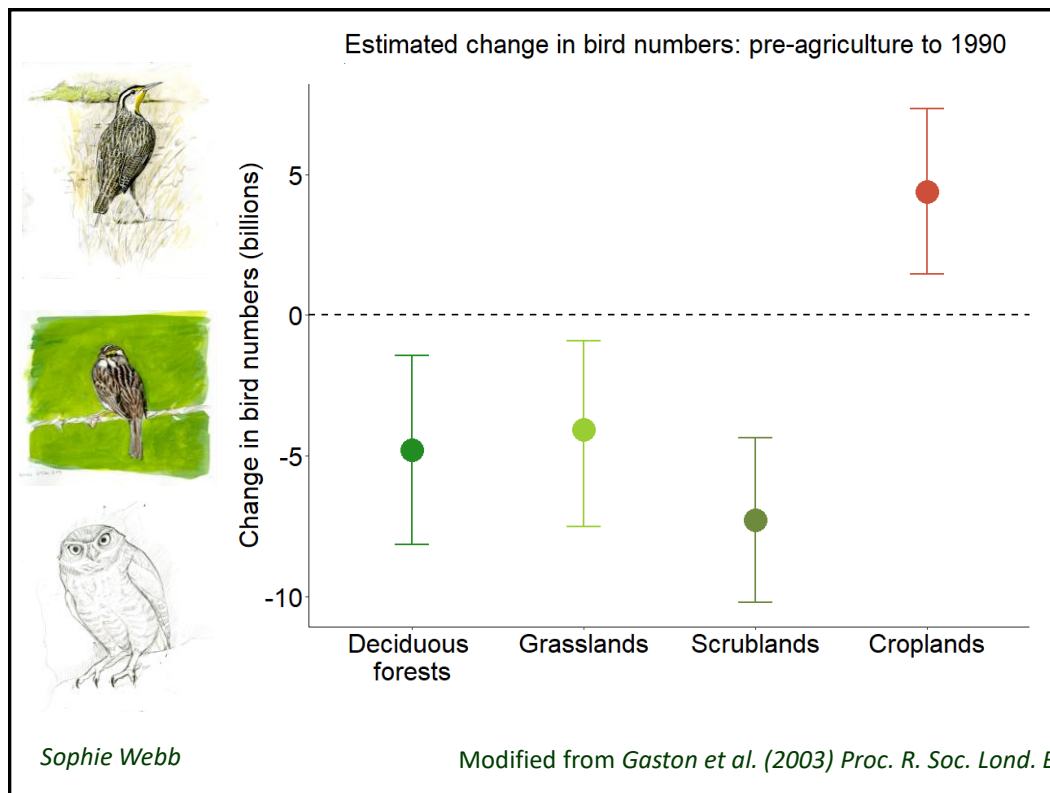
*"greatest extinction
threat to birds"*

Green et al. 2005. Science





Adapted from Foley et al. (2005) Science



“Conservation will ultimately boil down to rewarding the private landowner who conserves the public interest.”

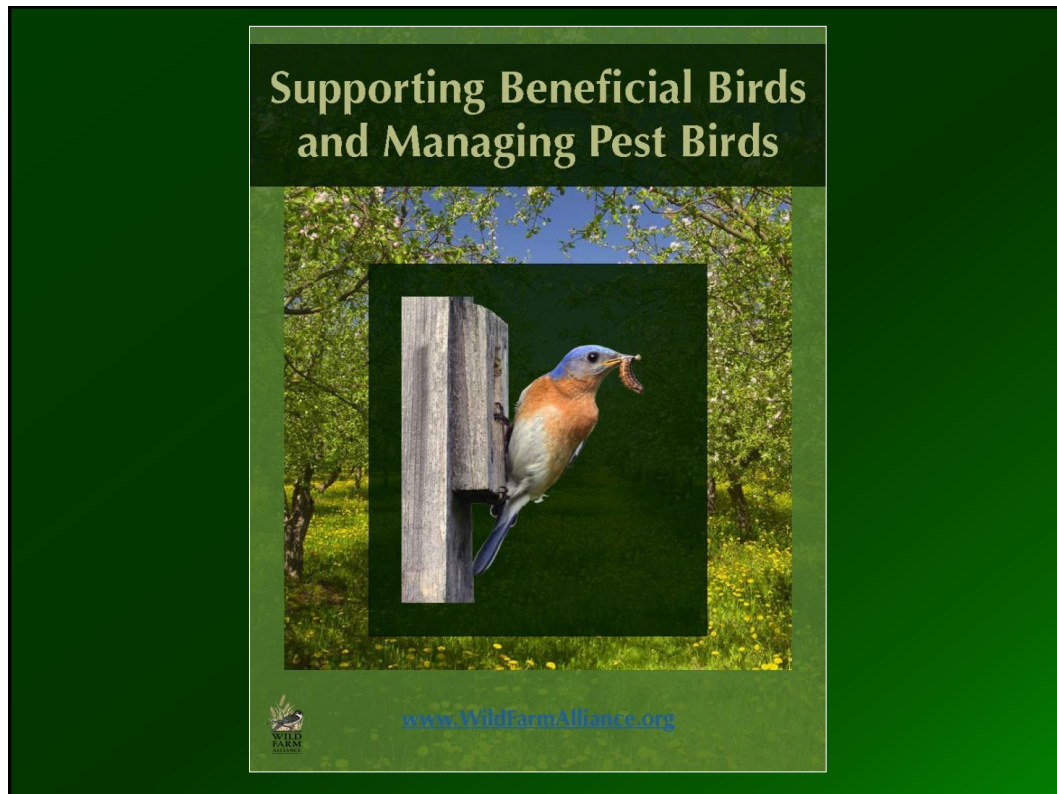
Aldo Leopold

Conservation Economics, *The River of the Mother of God*

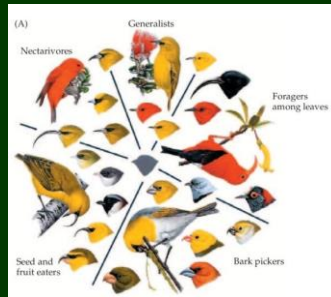


~25,000 miles of ditches and canals in the Central Valley of California alone

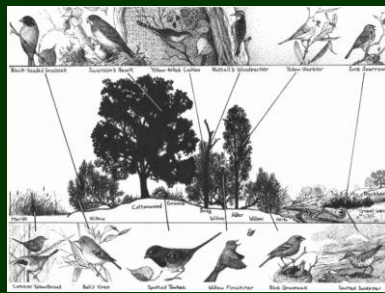




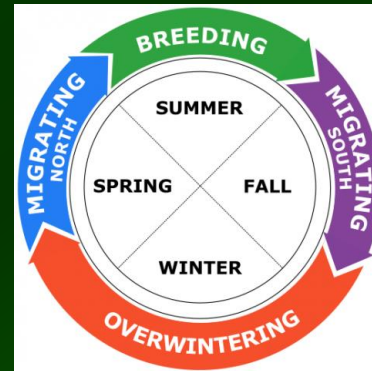
Bird foraging and life history traits



Losos and Maher 2010

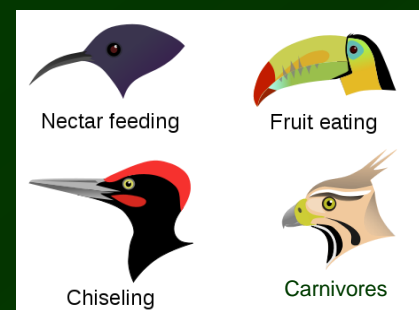
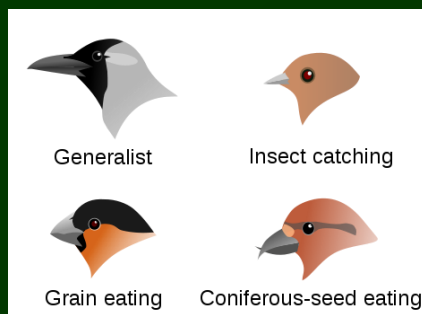


Zach Denning

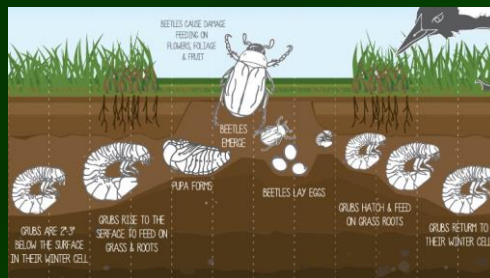


Smithsonian National Zoo

Bird foraging and life history traits



Bird foraging and life history traits



<https://naturallycuriouswithmaryholland.wordpress.com>

Bird foraging and life history traits

“mummy” nuts



Cocoons under bark



Cocoons in crevices



Bird foraging and life history traits



Daniel Leatherman

Bird foraging and life history traits



Glenn Bartley/Getty Images

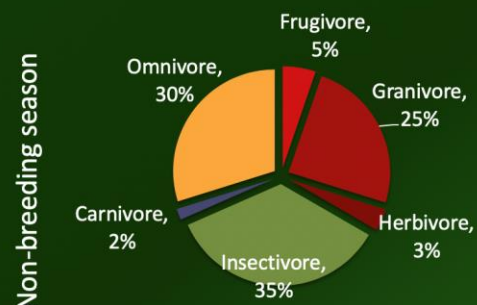
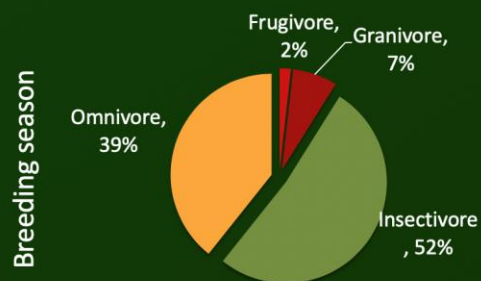


Bird foraging and life history traits

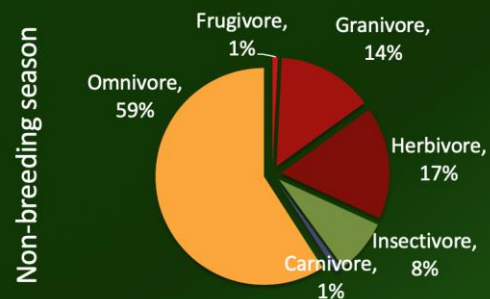
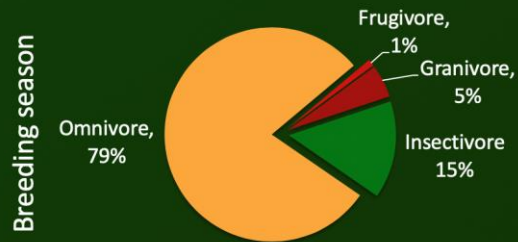
Seasonal effects on foraging strategies



Bird foraging and life history traits



Bird foraging and life history traits



Bird foraging and life history traits



Bird foraging and life history traits



Bird foraging and life history traits



California Scrub-Jay
(0.66%)



Acorn
Woodpecker (4%)



Emlen 1937

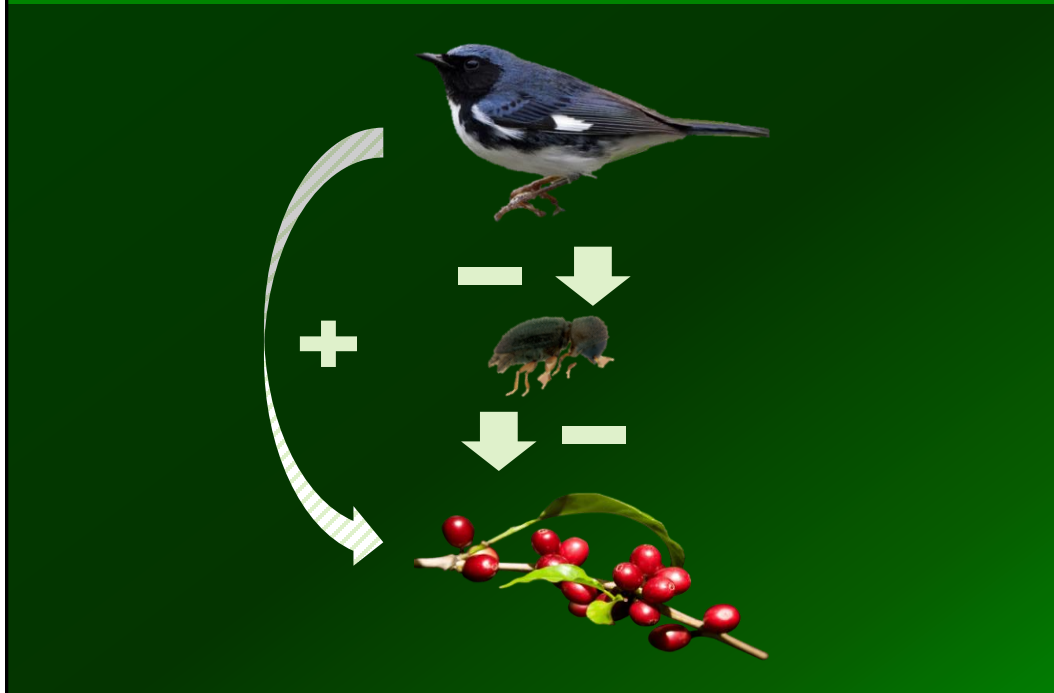


American Crow
(13%)

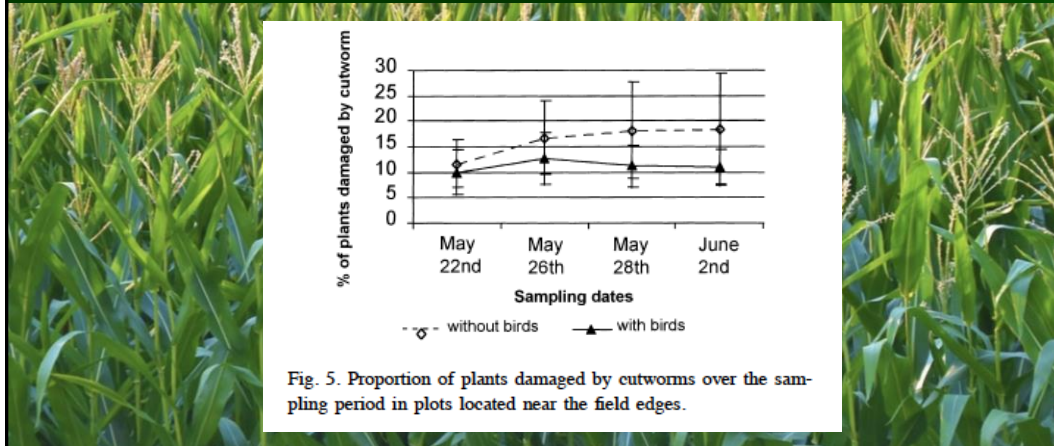


Northern Flicker
(0.66%)

Bird foraging and life history traits



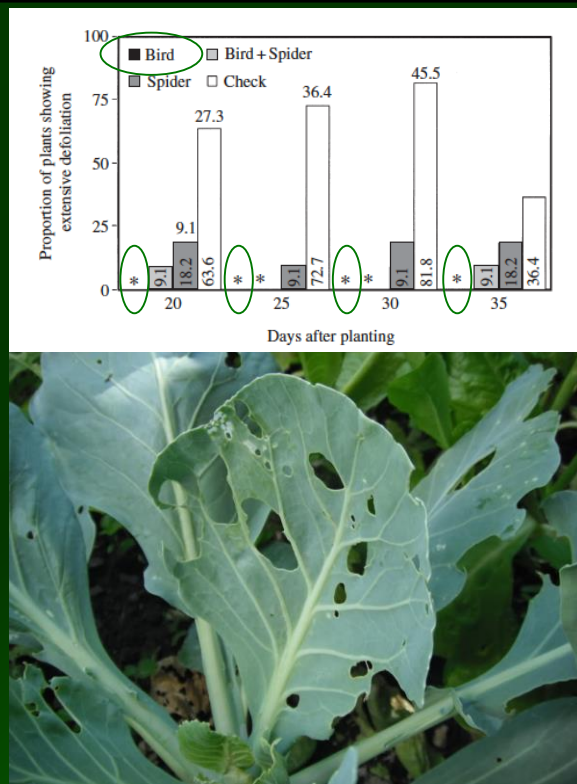
What: Corn
Where: Quebec
Who: Tremblay, Mineau & Stewart
When: 2001
How: Exclosures
Key Findings: Birds reduced cutworm and weevil pest populations, but this had no effect on crop yield



What: Hops
Where: Washington State
Who: Grasswitz & James
When: 2011
How: Exclosures
Key Findings: Excluding birds increased larval survival, but invertebrate predators and parasites more important for control.



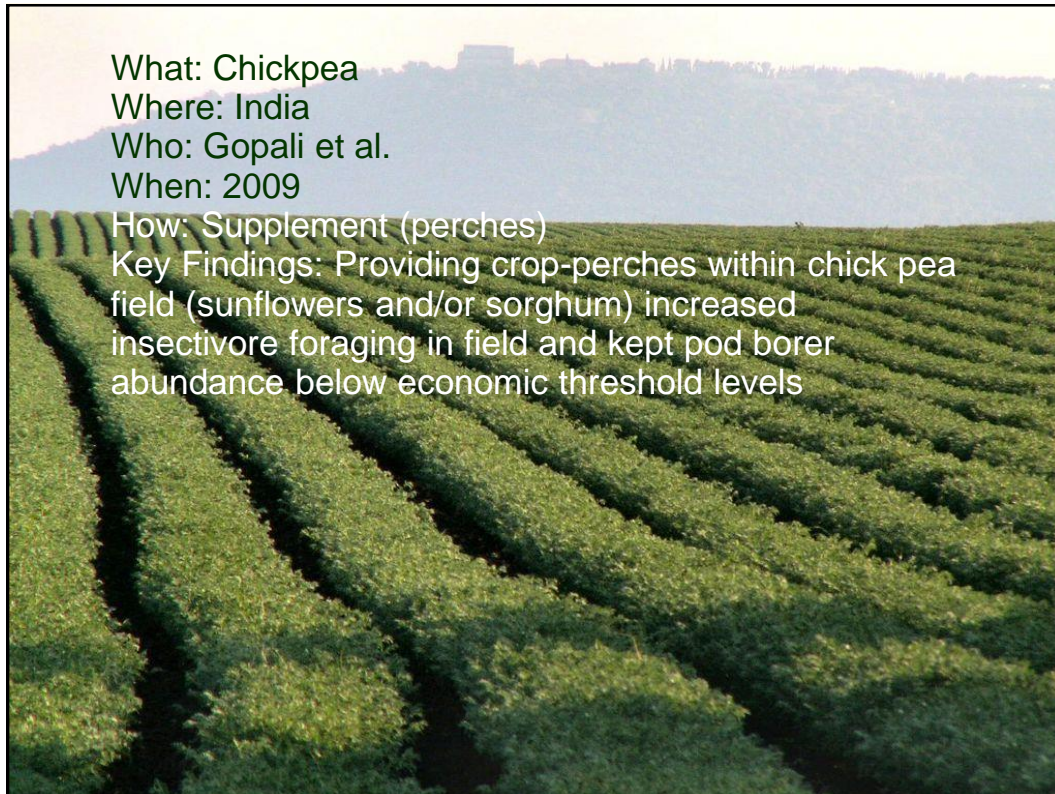
What: Broccoli
Where: Hawaii
Who: Hooks et al.
When: 2003
How: Exclosures
Key Findings: Birds had the most important effect on reducing foliage damage (but were a good team with spiders)



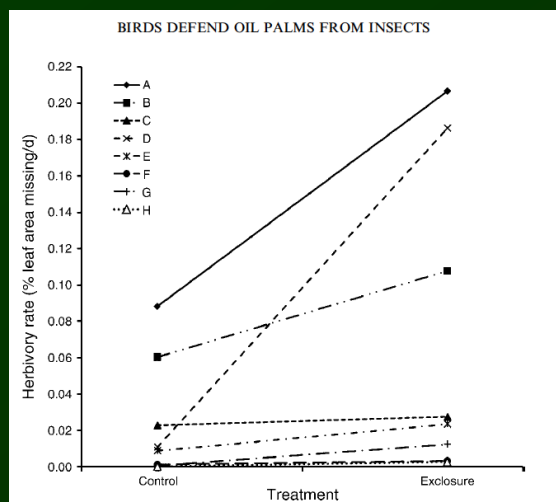
What: Pigeon Pea
Where: India
Who: Bharucha & Padate
When: 2010
How: Observations/ insect counts



Key Findings: Jungle babbler (*Turdoides striatus*) consumed gram pod borer and increased in abundance when pod borer infestation increased



What: Oil palm
 Where: Indonesia
 Who: Koh
 When: 2008
 How: Exclosures
 Key Findings: Significantly more herbivory to young oil palm plants when birds could not access them.



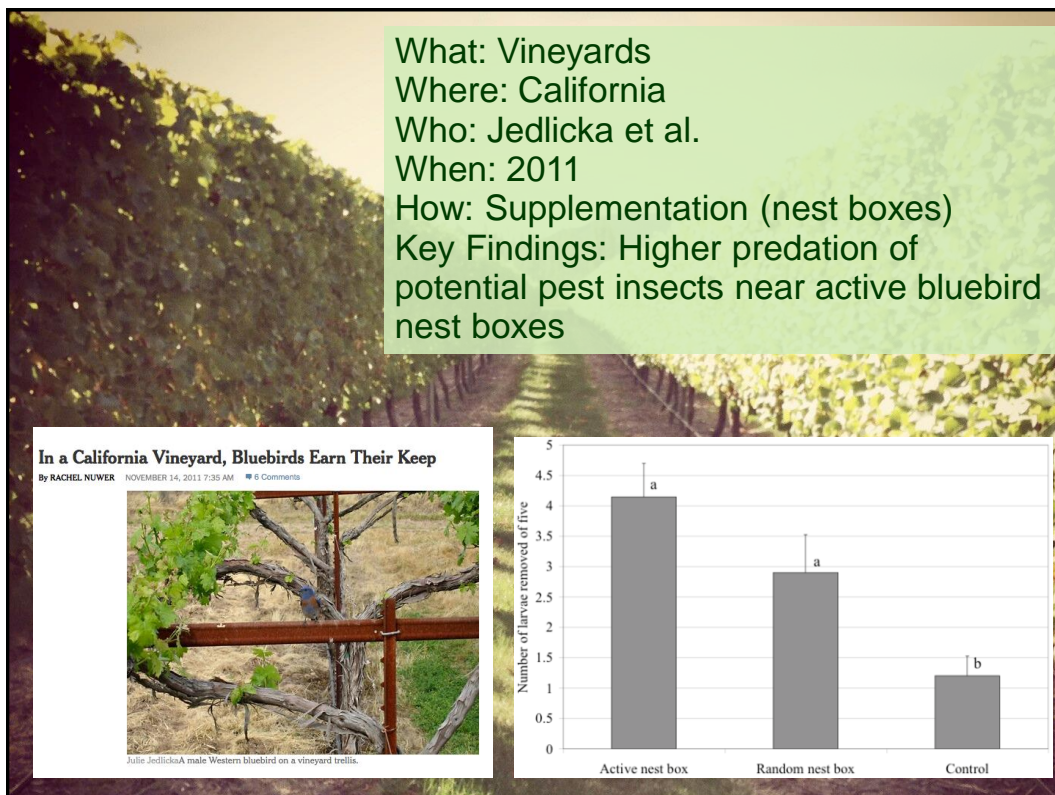
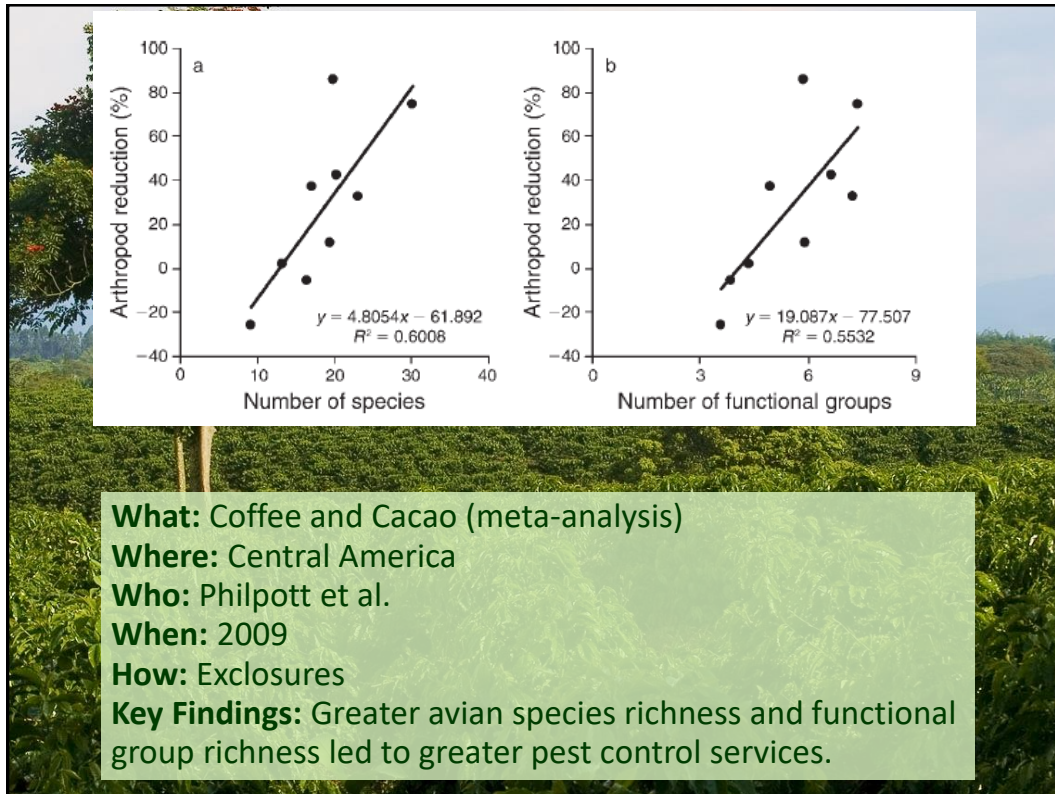
Ashy tailorbird



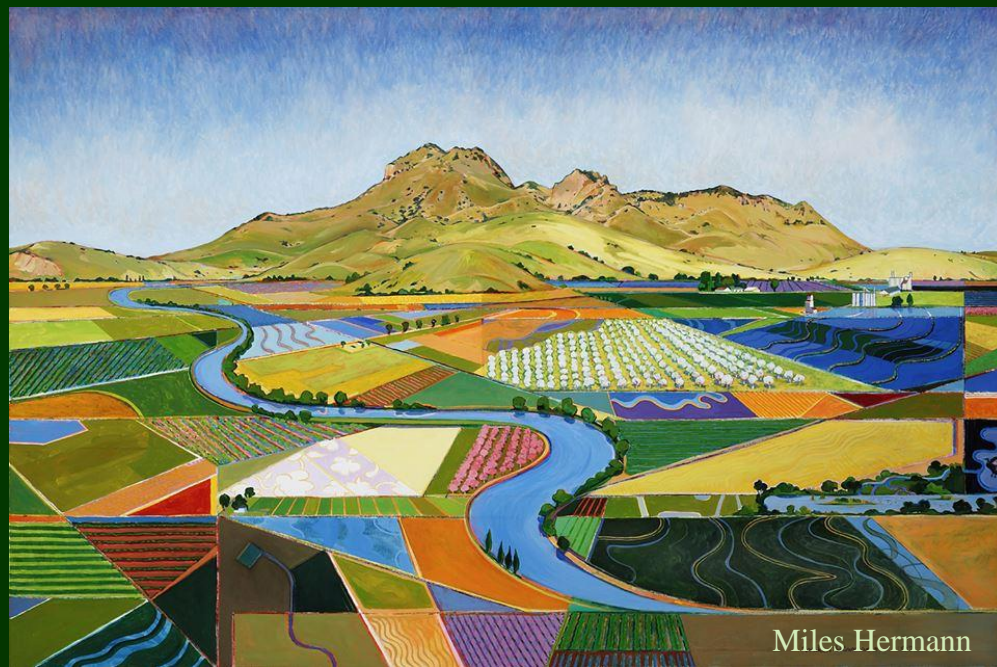
Oriental magpie-robin



Greater Coucal

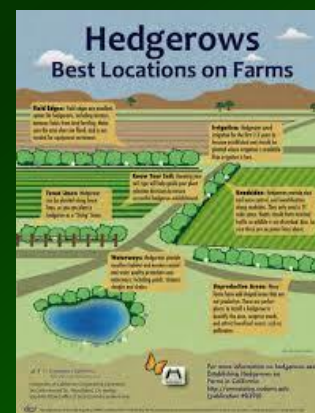


Habitat



Habitat

Habitat enhancement for birds on farms

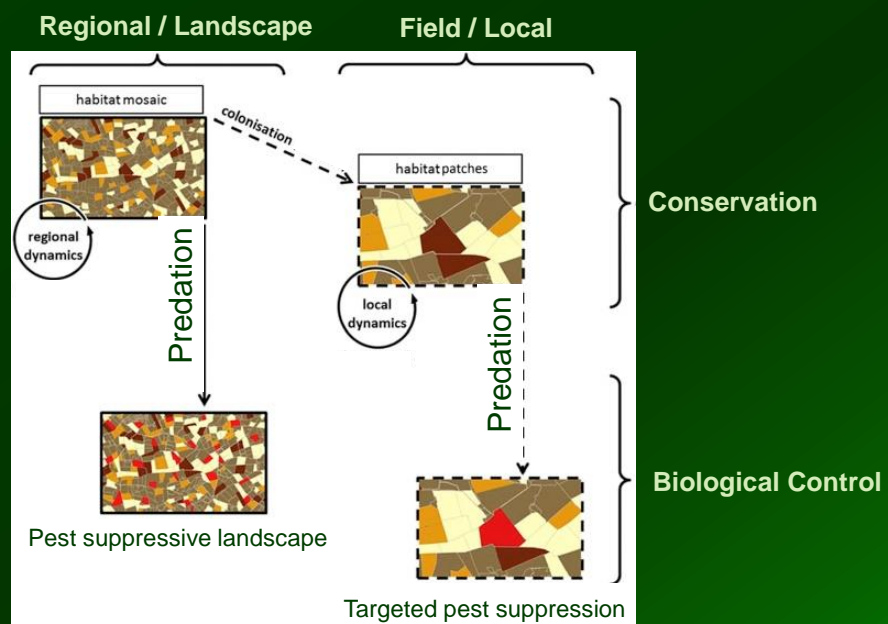


Habitat

Conservation Biological Control

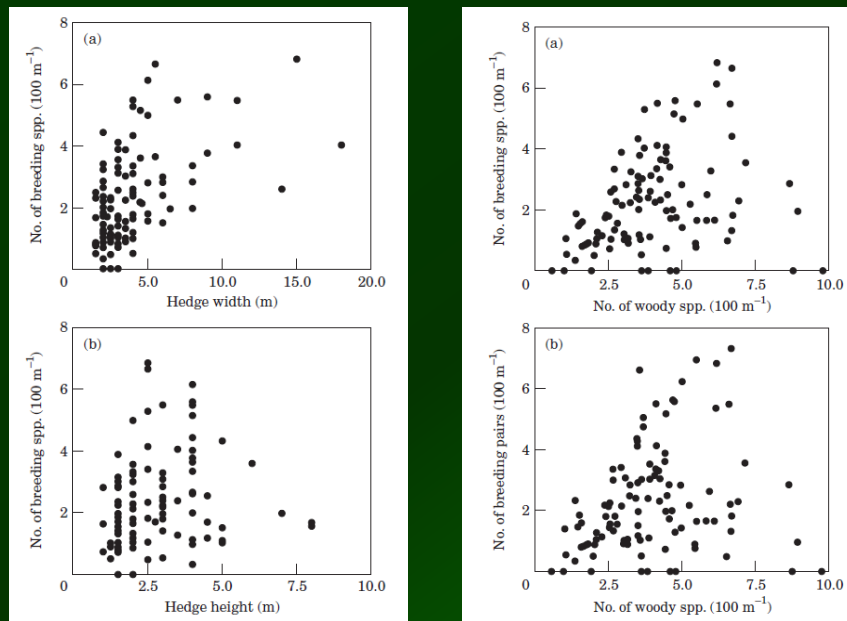


Habitat



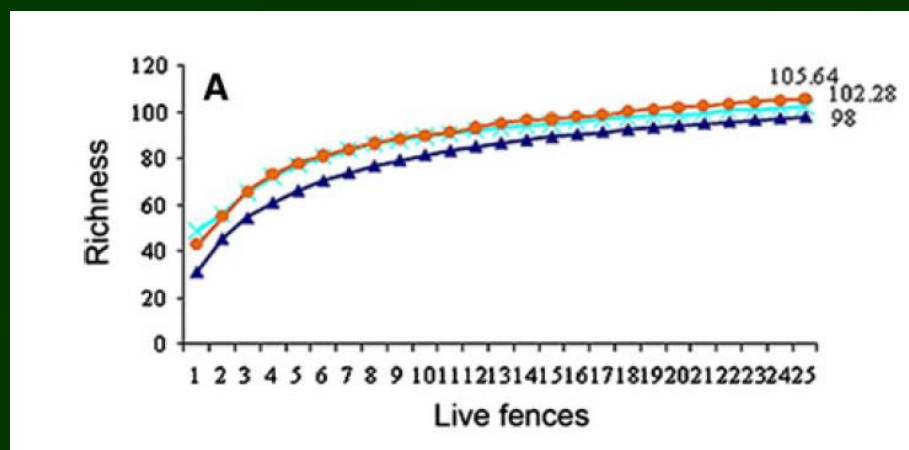
Adapted from Begg *et al.*
(2017) Crop Protection

Habitat



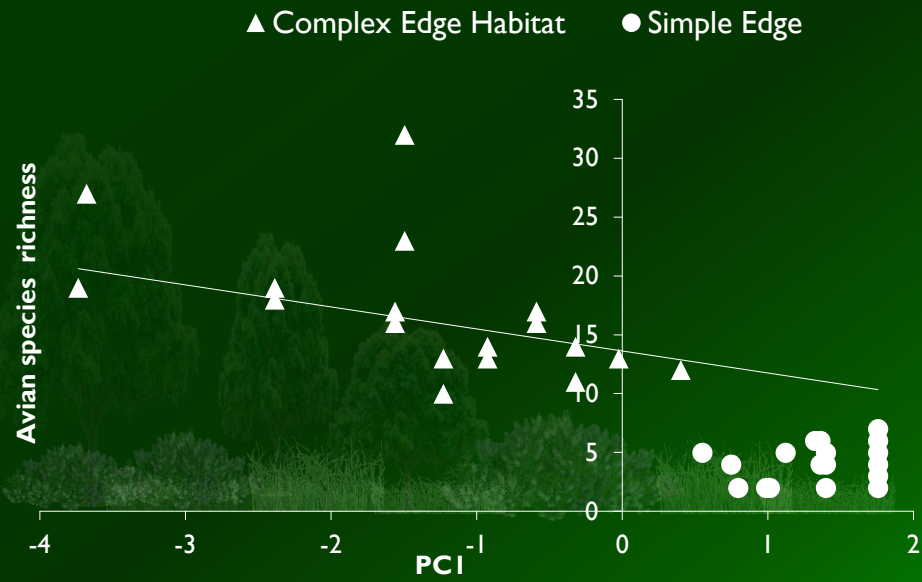
Hinsley and Bellamy 2000

Habitat

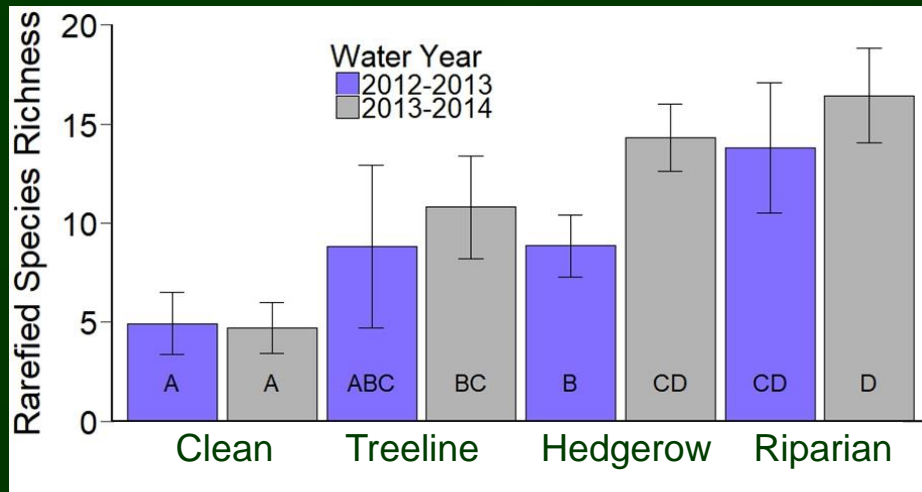


Hinsley and Bellamy 2000

Habitat

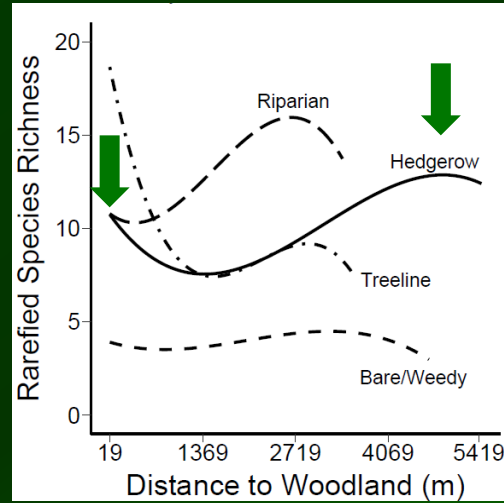


Habitat



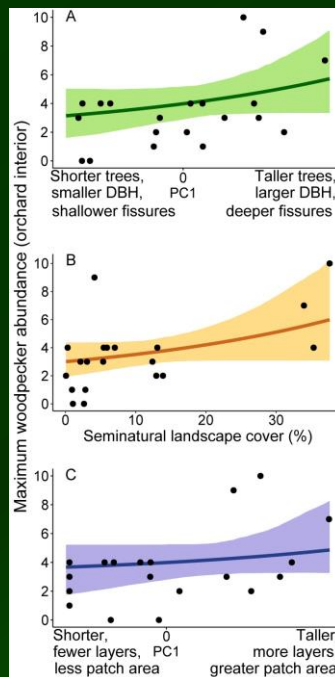
Heath et al. (2017)

Habitat



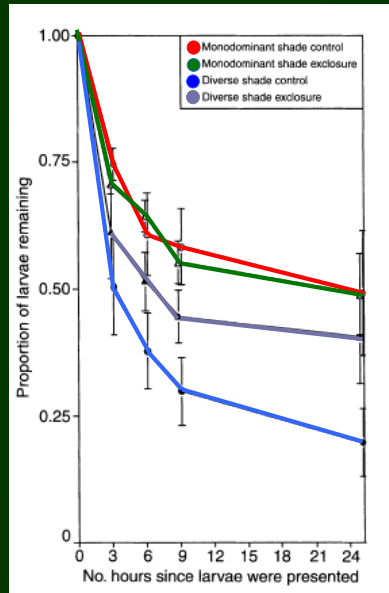
Heath et al. (2017)

Habitat



Heath and Long. In Press. *Ecosphere*.

Habitat



Perfecto et al. 2004. Greater predation in shaded coffee farms: the role of resident neotropical birds. *Ecology*. 85.

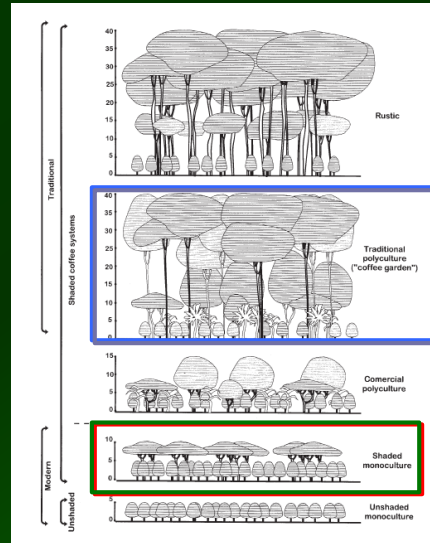
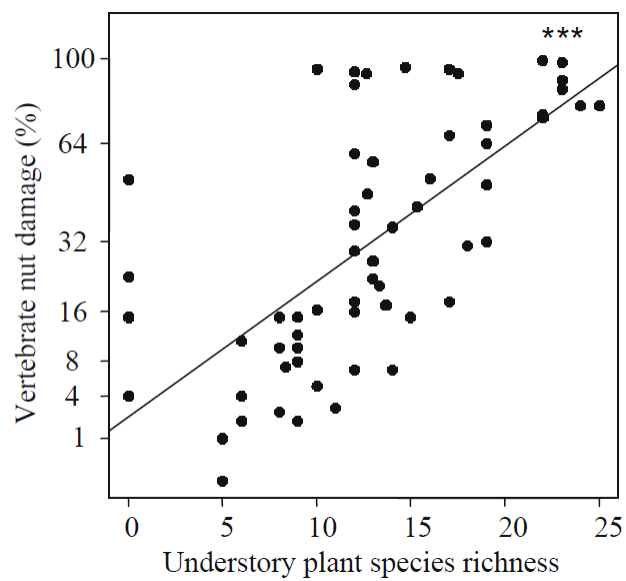


Image: Moguel & Toldeo. 1999. Biodiversity conservation in traditional coffee systems of Mexico. *Conservation Biology*. 13

Habitat



"Nut damage" here means beneficial bird consumption of "mummy" nuts infested with Navel Orange Worm

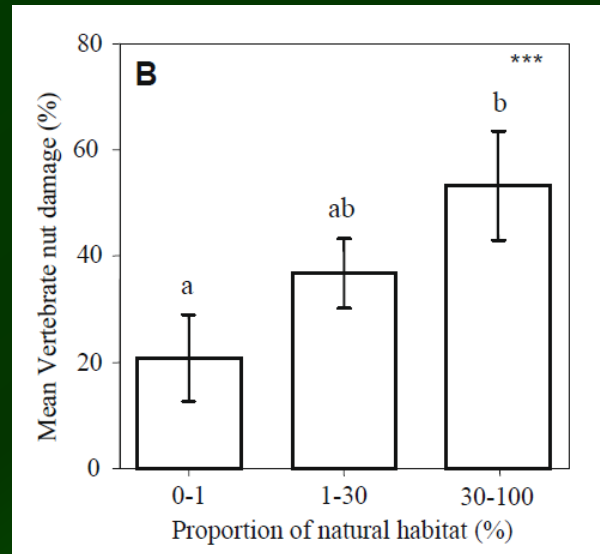


Eilers and Klein 2009

Habitat

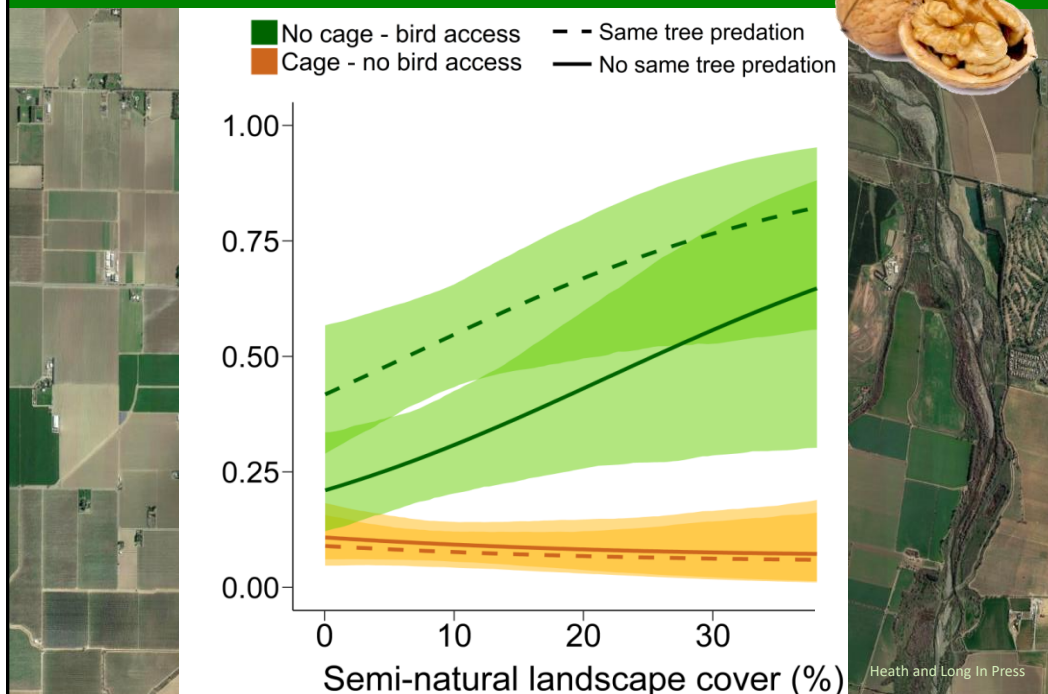


“Nut damage” here means beneficial bird consumption of “mummy” nuts infested with Navel Orange Worm



Eilers and Klein 2009

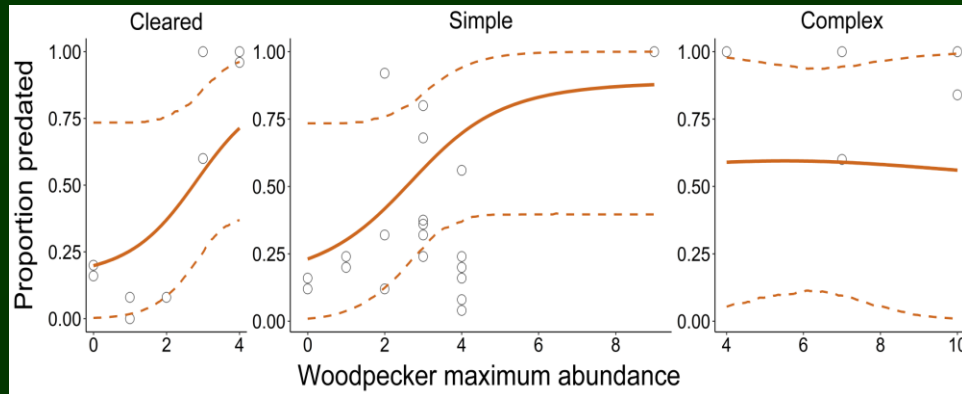
Habitat



Habitat



Seminatural Cover × Interior Woodpeckers



Heath and Long In Press

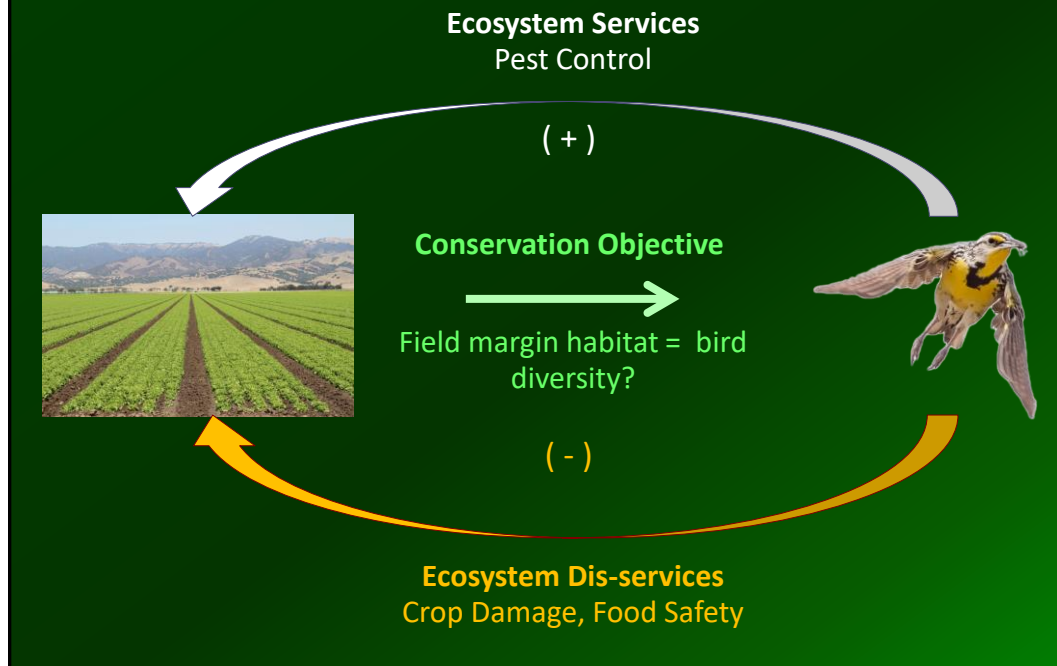
Hang on a minute!

**Birds sound great and all, but
Birds damage crops!**
(How can I manage for beneficial birds and deter
damaging birds?)



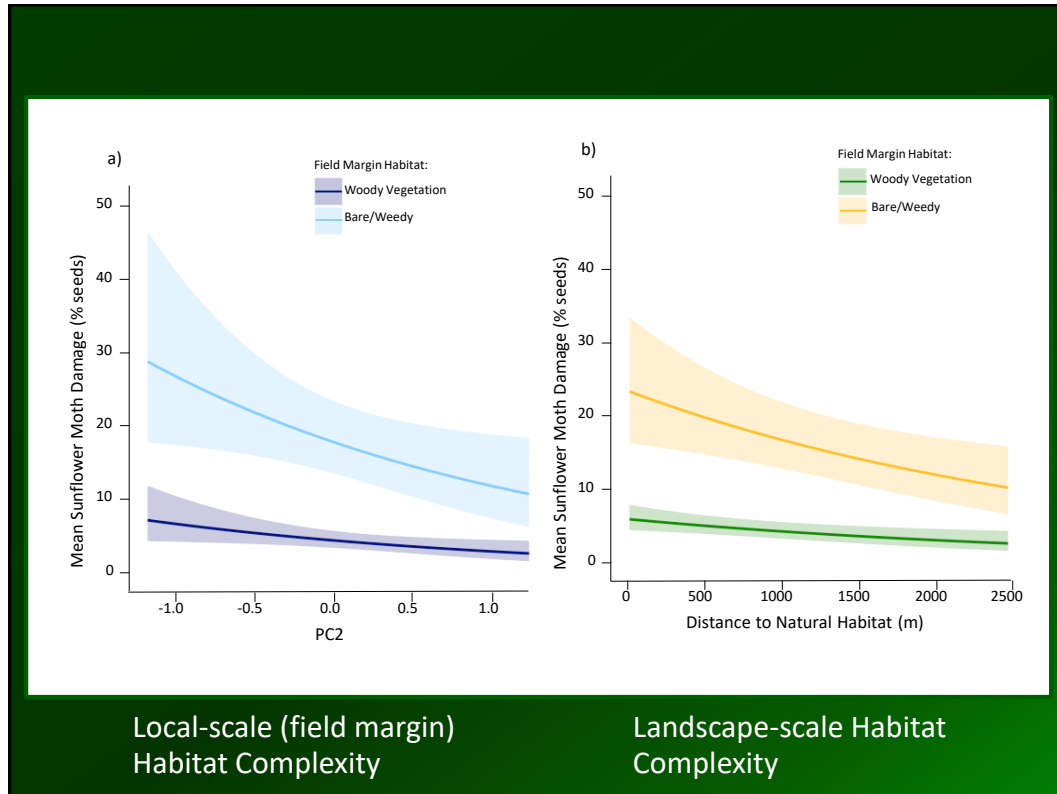
R. Bourbour

Net Effects of Birds

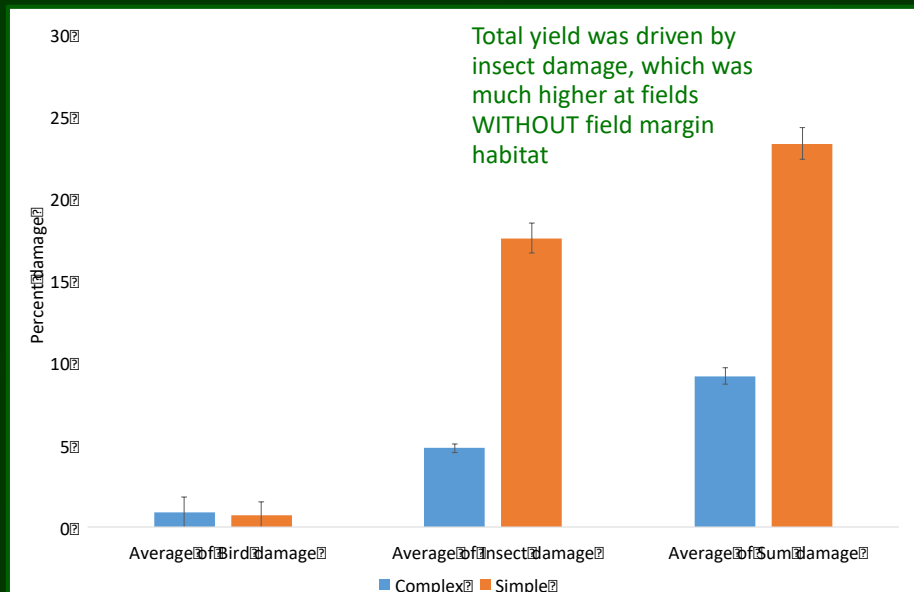


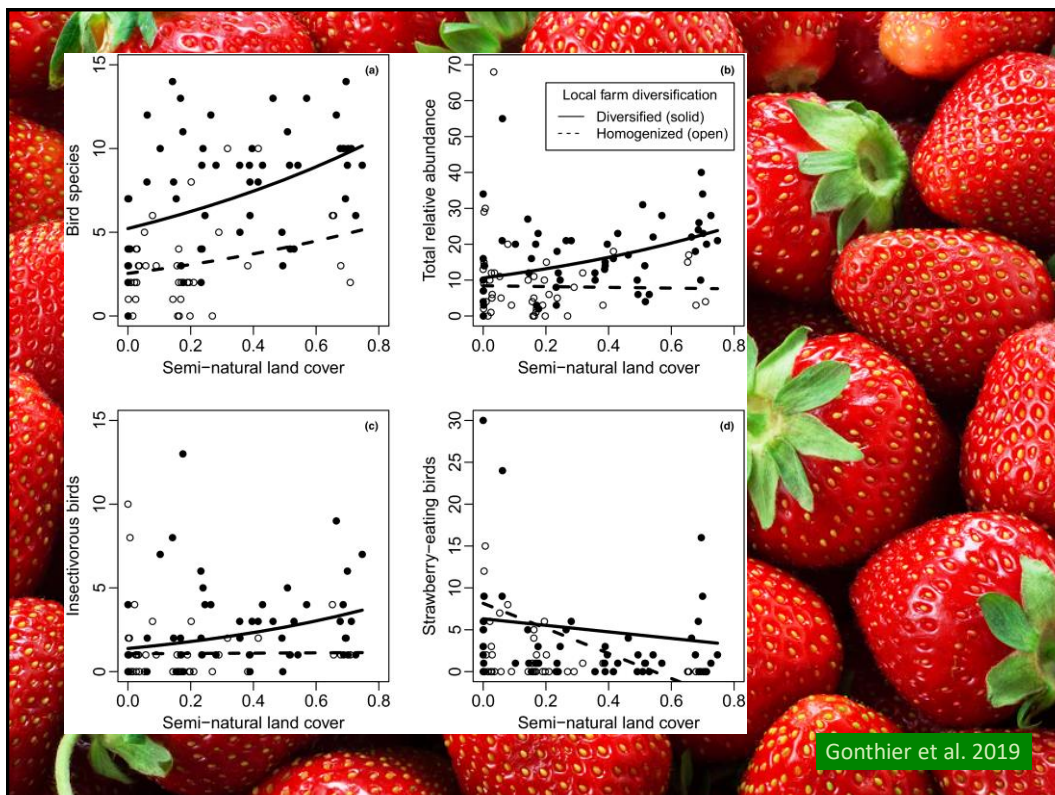
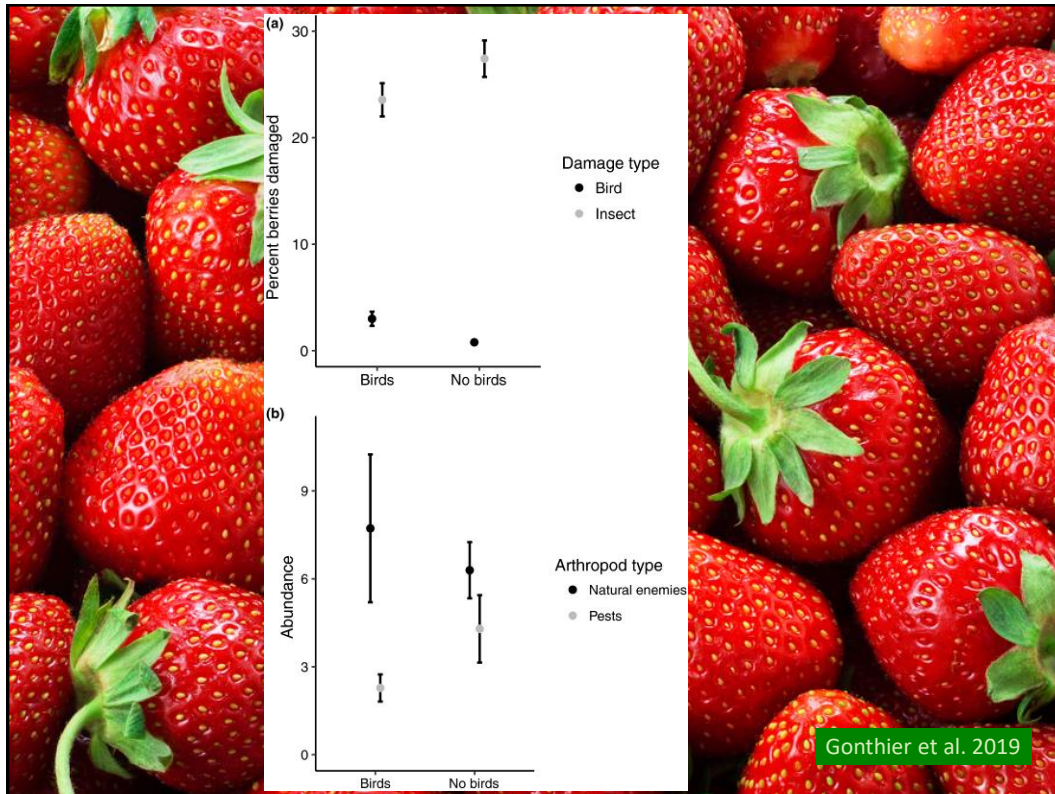
Local and landscape habitat increase bird diversity in sunflower fields





Contrary to normal assumptions, fields with trees along their edge did not have significantly higher bird damage





Want to
manage for
birds on your
land?

Step 1: Birdwatching.



TheCornellLab
Merlin

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Merlin Bird ID App

Free, Instant Bird ID Help for
400 North American birds

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App Store

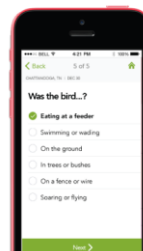
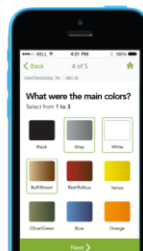
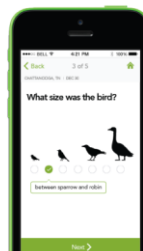
ANDROID APP ON
Google play



Prairie Warbler © Gerrit Vyn

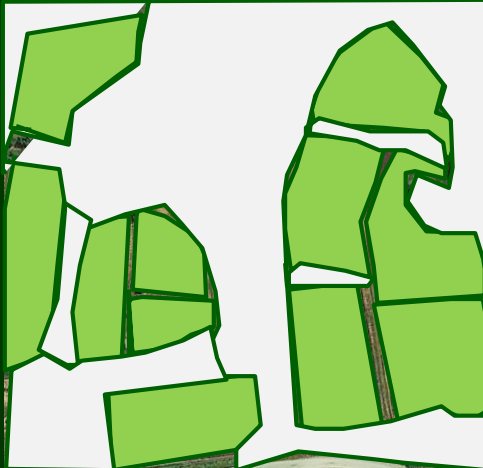
Bird ID Wizard—Step-by-step

Answer five simple questions about a bird you are trying to identify and Merlin will come up with a list of possible matches. Merlin offers quick identification help for beginning and intermediate bird watchers to learn about North America's most common birds!



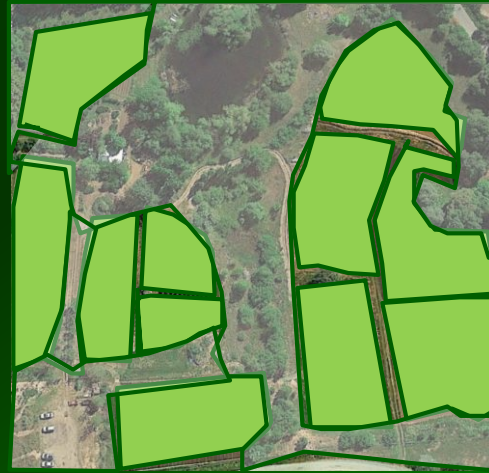
Step 2: Habitat Inventory

Standard farm maps:
Just fields?



Non-standard:

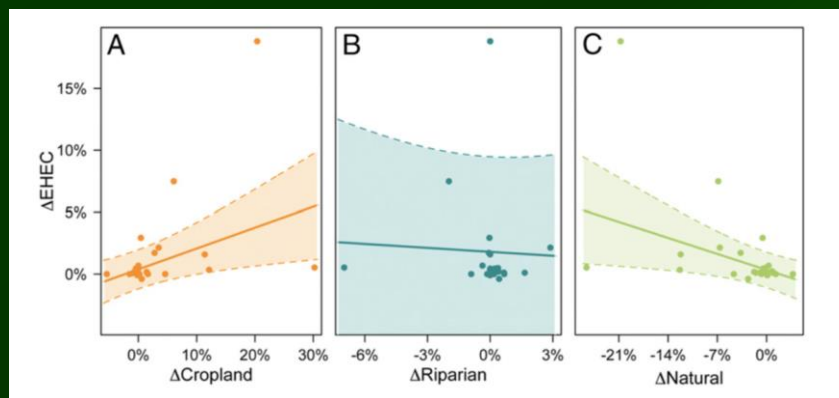
Pre-existing habitat
Planning for future habitat
Are there difficult areas to farm?
Rotations that have high bird damage risk?



What about food safety?



Enterohemorrhagic *E. coli* (EHEC) on leafy green crops in California increased over time as growers replaced natural habitat with cropland



Karp et al. 2015. Comanaging fresh produce for nature conservation and food safety. *PNAS*



Birds damage crops!



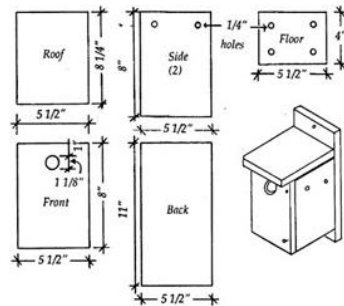
**NRCS
Cost-share program
NH-645**

Bluebird
Tree Swallow
Wrens

House Sparrow
Starling

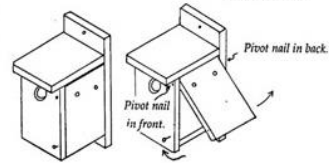
Wren House

House Wren*, Black-capped Chickadee*,
White-breasted Nuthatch, Prothonotary
Warbler, Deer Mouse, Flying Squirrel and
White-footed Mouse Nest Box



Note: Entrance hole diameter is 1 1/8".

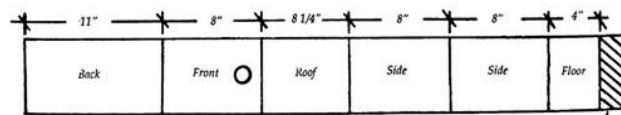
(An entrance hole diameter of 1 1/4" is needed for the white-breasted nuthatch and flying squirrel.)



Use one nail or screw at bottom to close side. Nail or screw holds side closed.

Two "pivot" nails allow side to swing out for cleaning.

Lumber: One 1" x 6" x 4'0".



There are MANY bird deterrents available on the market

Visual



Exclusion



Auditory

Controlling Pest Birds- Natural Enemies

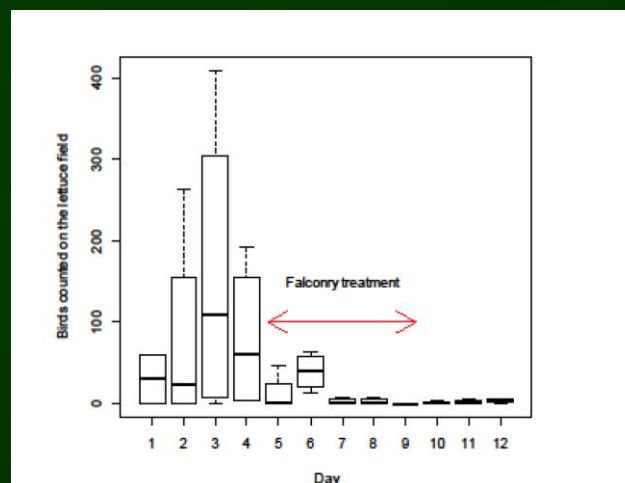
Falconry can be effective- but little research has been done and costs are very high



\$650/day/ bird will cover up to 1,000 acres
Team up with your neighbors for more effective control

Use of Falconry to Deter Nuisance Birds in Leafy Greens Fields in Northern California

Nora Navarro-Gonzalez and Michele T. Jay-Russell
Western Center for Food Safety, University of California-Davis, Davis, California



Promising results but confounding factors/ low bird numbers in some trials.

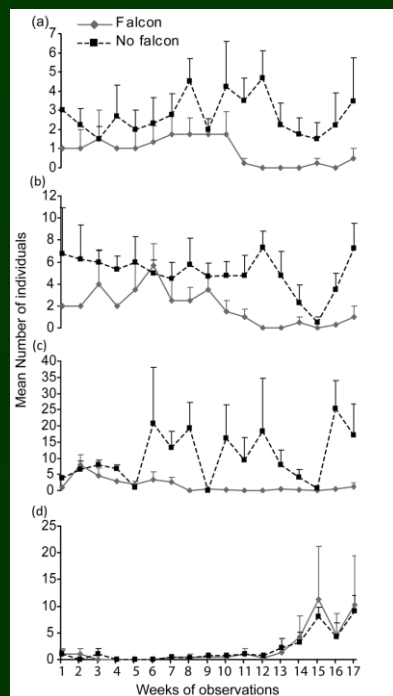
Controlling Pest Birds- Natural Enemies



How does the presence of falcons in a vineyard alter the populations of pest birds and/or the amount of damage to wine grapes?



Kross, S.M., Tyliakianis, J.T. & Nelson, X.J. 2012. Effects of introducing threatened falcons into vineyards on abundance of Passeriformes and bird damage to grapes. *Conservation Biology*.



78.4% fewer song thrush
 $p < 0.01$



82.5% fewer blackbirds
 $p = 0.02$

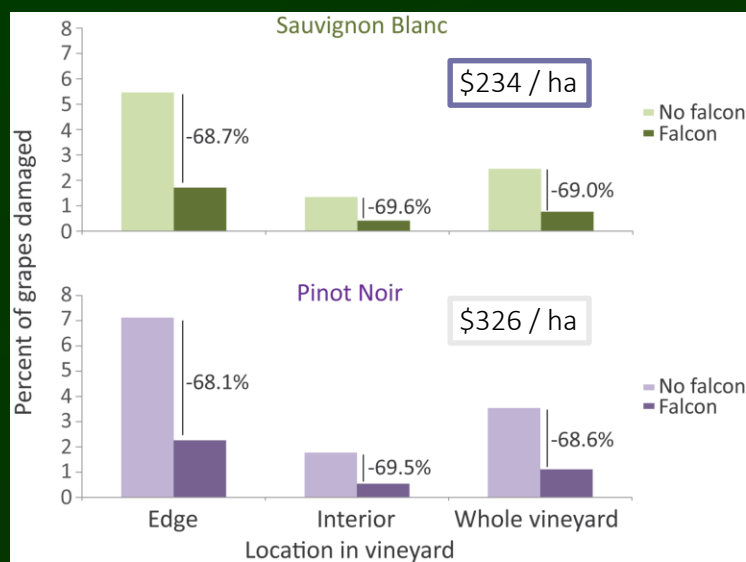


79.2% fewer starlings
 $p = 0.06$



No effect on silvereyes
(removed from model)
 $p = 0.30$

Falcon effect across vineyard scale, all damage



95% fewer removed grapes ($p < 0.001$); 55% fewer pecked grapes ($p < 0.01$)

You're in a much better situation than the growers in NZ!



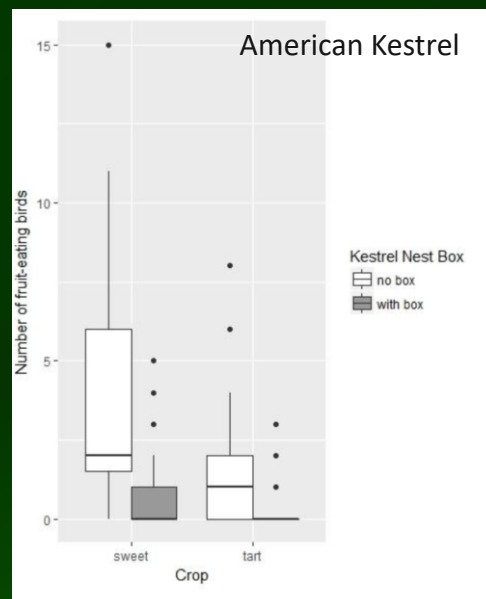
Controlling Pest Birds- Natural Enemies



\$1 spent on nest boxes=

\$84 to \$357 in sweet
cherry yield protected
from bird damage

(no effects of perches)



Shave et al. 2018. Falcons using orchard nest boxes reduce fruit eating bird abundances and provide economic benefits for a fruit-growing region. *Journal of Applied Ecology*.

Structures for Wildlife- Kestrel Boxes



THE PEREGRINE FUND

Conserving Birds of Prey Worldwide

WHO WE ARE
Conservation • About Us • Communications • Events

WHAT YOU CAN DO
Enjoy! • Participate • Visit • Learn • Research

SIGN IN • JOIN • SUBSCRIBE • SHOP • SEARCH: **GO**

DONATE NOW

Build a nest box for kestrels

The American Kestrel (sometimes called a "Sparrowhawk") is a small, colorful falcon, roughly the size of a pigeon. It is North America's most common raptor – in fact, kestrels are found everywhere from the Arctic Circle to Tierra del Fuego! They can often be spotted perched or even hovering over fields, hunting for small prey like mice and insects.


Why put up a nestbox?

In recent years, researchers have become alarmed by kestrel population declines across North America. Since nesting habitat is important for this species' success, The Peregrine Fund is encouraging anyone with enough open space to put up a human-made nestbox. The birds love them, and they offer a front-row seat for watching raptors raise a family.

Download Kestrel nest box instructions



Meet a kestrel up close



Bob

Come visit us and you might get a chance to meet our kestrel up close during a **live bird presentation!**



© Bert Bowler

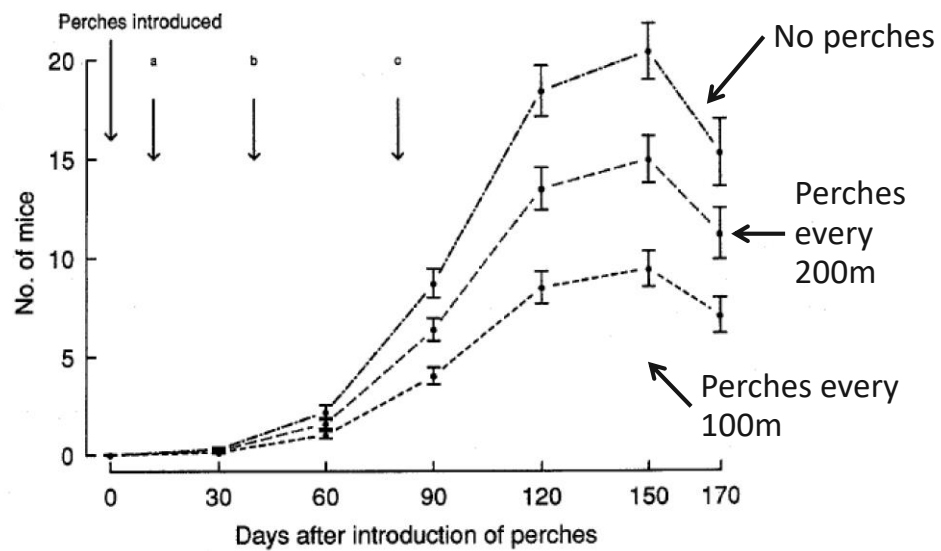
• Learn about kestrels

Or American Kestrel Partnership website

Structures for Wildlife- Raptor Perches



Perches placed along field margins in soybeans, Australia reduced mouse populations



Kay et al. 1994. The use of artificial perches to increase predation on house mice (*Mus domesticus*) by raptors. *Wildl. Res.*, 21: 95-106



Artificial perches for raptors- can be cemented into ground or attached to a pre-existing fencepost

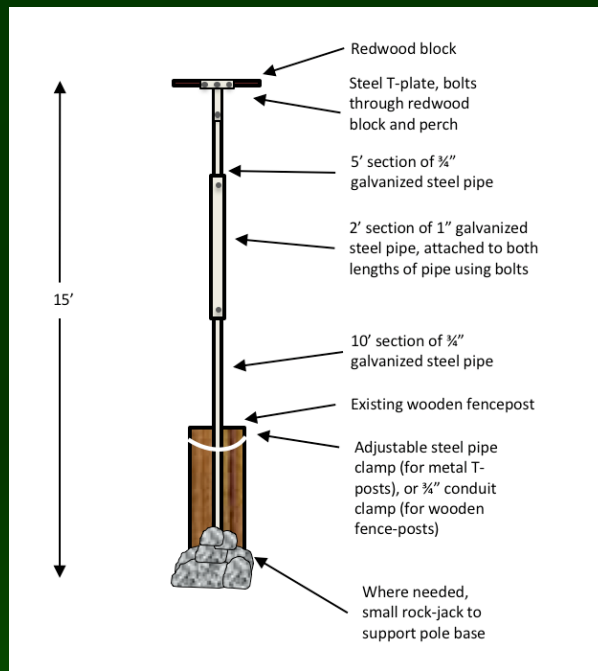
Place perches along
hilltops
(not at bottom of hills)

Place perches further
from trees
Not immediately next to
trees

15 feet tall from ground

Sara Kross, Scott Hardage, Renata Chapman,
Andrea Craig, & T. Rodd Kelsey

Sacramento State, The Nature Conservancy &
Columbia University
With support from a California Conservation
Innovation Grant (NRCS)



Barn owl boxes double as raptor perches



Control of rodent pests: Natural Enemies



Farmers in many areas (including California, Malaysia, and Israel) have invested in constructing nest boxes to increase barn owl populations.



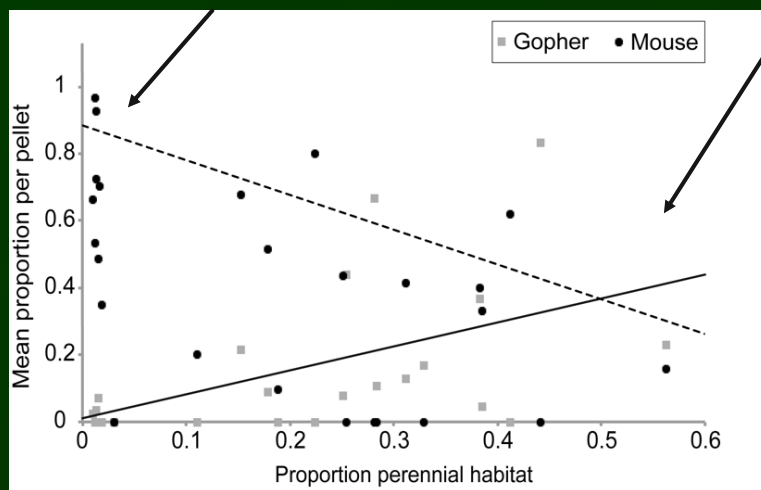


Kross, Bourbour & Martinico. 2017. Agricultural land use, barn owl diet, and vertebrate pest control implications. *Agriculture, Ecosystems & Environment*

Barn Owls are generalist predators

Barn owls nesting in row crops ate fewer gophers and more mice

Barn owls nesting in vineyards and orchards ate more gophers



Annual biomass requirements for a typical pair of breeding barn owls and their progeny:

215 lbs of rodent prey = over 2,500 rodents



Boxes can be as low as 8-12 feet from the ground
Should be checked for cleaning by end of December

Although, Wendt & Johnson (2017) found that poles >3m tall were more likely to be occupied



“...raptors are great! How do I get more of them?”

Provide habitat for nesting: keep local populations healthy.



Red-tailed hawks like **tall trees**



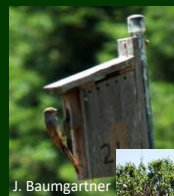
Kestrels and barn owls are cavity-limited: put up boxes and **retain old/dead trees**

Sharp-shinned hawks need **forest** areas



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Structural Habitat



Vegetative Habitat



Provide Water Sources



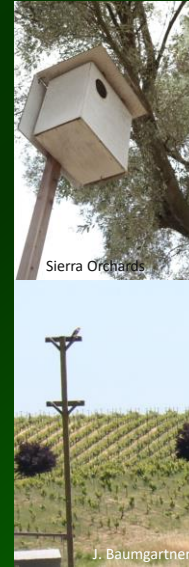
Manage Farm Fields



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Structural Habitat

- Nest Boxes
- Perches
- Platforms and Ledges



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Vegetative Habitat

- Riparian
 - Ditches and Canal Banks
 - Creeks and Streams



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Vegetative Habitat

Field Interiors and Edges

Hedgerows and Windbreaks



NRCS EQIP Conservation Practices

These practices yield multiple resilience benefits to the farm, besides providing for the birds themselves.

USDA NRCS Conservation Practices	Supports Birds	Provides Resilience to Weather Extremes				
EQIP (Environmental Quality Incentive Program)	Provides Habitat for Birds (food, cover, shelter, roosting and nesting sites and/or water)	Supports Other Beneficial Organisms with habitat	Stores Carbon and Excess Nitrogen in woody biomass and/or in soil	Protects Soil from erosion caused by intense storms	Reduces Flooding caused by intense storms and/or Drought & Fire Impacts caused by low rainfall	Protects Crops from intense storms and/or increased pest pressure
Alley Cropping	x	x	x	x		x
Brush Management	x	x		x	x	x
Conservation Cover	x	x	x	x		x
Conservation Tillage	x	x	x	x	x	x
Field Borders	x	x	x	x		x
Hedgerow Planting	x	x	x	x		x
Integrated Pest Management	Reduces risk of pesticides	Reduces risk of pesticides				x
Multi-story Cropping	x	x	x	x		x
Pond	x	x			x	x
Prescribed Grazing	x	x	x	x	x	x
Riparian Herbaceous Cover	x	x	x	x	x	x
Riparian Forest Buffer	x	x	x	x	x	x
Silvopasture	x	x	x	x	x	x
Structures (brush piles)	x	x				x
Structures (Burrowing Owl burrows)	x					x
Structures (escape ramps)	x	x				x
Structures (fence markers)	x					x
Structures (nest boxes)	x					x
Structures (perches)	x					x
Structures (snag creation)	x	x				x

Use Native Plants

Common Name	Family	Plant Genus	Species Supported
Oak	Fagaceae	<i>Quercus</i>	534
Willow	Salicaceae	<i>Salix</i>	456
Cherry, plum	Rosaceae	<i>Prunus</i>	456
Birch	Betulaceae	<i>Betula</i>	413
Poplar, cottonwood	Salicaceae	<i>Populus</i>	368
Crabapple	Rosaceae	<i>Malus</i>	311
Blueberry, cranberry	Ericaceae	<i>Vaccinium</i>	288
Maple, box elder	Aceraceae	<i>Acer</i>	285
Elm	Ulmaceae	<i>Ulmus</i>	213
Pine	Pinaceae	<i>Pinus</i>	203
Hickory	Juglandaceae	<i>Carya</i>	200
Hawthorn	Rosaceae	<i>Crataegus</i>	159
Alder	Betulaceae	<i>Alnus</i>	156
Spruce	Pinaceae	<i>Picea</i>	156
Ash	Oleaceae	<i>Fraxinus</i>	150
Basswood, linden	Tiliaceae	<i>Tilia</i>	150
Filbert, hazelnut	Betulaceae	<i>Corylus</i>	131
Walnut, butternut	Juglandaceae	<i>Juglans</i>	130
Beech	Fagaceae	<i>Fagus</i>	126
Chestnut	Fagaceae	<i>Castanea</i>	125



Chickadees had nest failures because of lack of insect food when yards had less than 70% native plants.

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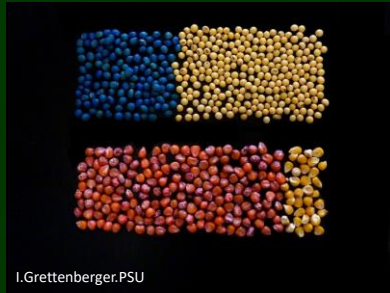
Provide Water Sources



Fresh Run Farm

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Manage Farm Fields Safely



I. Grettenberger, PSU

Neonicotinoid-Treated Seed



UCANR

Rodenticide Bait

Avoid using neonic-treated seed; and rodenticides, especially the second generation kind.

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Manage Farm Fields



NRCS

Phil Foster Ranches

Cover crop grown with minimum tillage



Roller-crimper kills cover crop

Reduced tillage results in:

- Better cover for birds.
- Supports insects and seeds birds eat.

Insectivores

Bird Family/Species	Nest Type	Foraging Strategy
Plover Family		
Killdeer		Ground
Woodpecker Family		
Red-breasted Sapsucker		Bark
Nuttall's Woodpecker		Bark
Downy Woodpecker		Bark
Hairy Woodpecker		Bark
Northern Flicker	Nest Box	Ground
Flycatcher Family		
Pacific-slope Flycatcher		Flycatching
Ash-throated Flycatcher	Nest Box	Flycatching
Black Phoebe	Eaves	Flycatching
Say's Phoebe	Ledges	Flycatching
Western Kingbird	Ledges	Flycatching
Swallow Family		
Barn Swallow	Structures & Ledges	Air
Cliff Swallow	Eaves	Air
Violet-green Swallow	Nest Box	Air
Tree Swallow	Nest Box	Air
Chickadee Family		
Black-capped Chickadee	Nest Box	Foliage Gleaner
Chesnut-backed Chickadee	Nest Box	Foliage Gleaner
Oak Titmouse	Nest Box	Foliage Gleaner
Tufted Titmouse	Nest Box	Foliage Gleaner



Insectivores

Bird Family/Species	Nest Type	Foraging Strategy
Bushtit Family		
Bushtit		Foliage Gleaner
Creepers Family		
Brown Creeper		Bark
Nuthatch Family		
White-breasted Nuthatch	Nest Box	Bark
Red-breasted Nuthatch	Nest Box	Bark
Wren Family		
Pacific Wren		Ground
Bewick's Wren	Nest Box	Foliage Gleaner
House Wren	Nest Box	Foliage Gleaner
Kinglet Family		
Golden-crowned Kinglet		Foliage Gleaner
Ruby-crowned Kinglet		Foliage Gleaner
Gnatcatcher Family		
Blue-gray Gnatcatcher		Foliage Gleaner
Thrush Family		
Western Bluebird	Nest Box	Flycatching
Eastern Bluebird	Nest Box	Ground
Wood Warbler Family		
Black-throated Grey Warbler		Foliage Gleaner
Wilson's Warbler		Foliage Gleaner
Tanager Family		
Summer Tanager		Foliage Gleaner



Carnivores

Bird Family/Species	Nest Type	Foraging Strategy
Heron Family		
Great Blue Heron	Structures	Stalking
Great Egret	Structures	Stalking
Cattle Egret		Stalking
Hawk Family		
Northern Harrier		Aerial Dive
Cooper's Hawk		Air
Red-tailed Hawk	Ledges	Soaring
Red-shouldered Hawk		Aerial Dive
Sharp-shinned Hawk		Aerial Dive
White-tailed Kite		Hoovering
Swainson's Hawk		Soaring
Falcon Family		
American Kestrel	Nest Box	Aerial Dive
Merlin		Air
Owl Family		
Great Horned Owl	Structures	Aerial Dive
Barn Owl	Nest Box	Aerial Dive
Northern Saw-whet Owl	Nest Box	Aerial Dive
Shrike Family		
Loggerhead Shrike		Aerial Dive
Northern Shrike		Aerial Dive
Vulture Family		
Turkey Vulture		Soaring



Practice Co-Existence with These Birds During Nesting Season

Omnivores/Granivores					
Bird Family/Species	Foraging Strategy	Bird Family/Species	Foraging Strategy	Bird Family/Species	Foraging Strategy
Quail Family		Sparrow Family		Oriole and Blackbird Family	
California Quail	Ground	White-crowned Sparrow	Ground	W. & E. Meadowlark	Ground
Crow Family		Song Sparrow	Ground	Brewer's Blackbird	Ground
California Scrub-Jay	Ground	Savannah Sparrow	Ground	Red-winged Blackbird	Ground
Yellow-billed Magpie	Ground	Chipping Sparrow	Ground	Yellow-headed Blackbird	Ground
American Crow	Ground	Grasshopper Sparrow	Ground	Common Grackle	Ground
Lark Family		Cassin's Sparrow	Ground	Orchard Oriole	Foliage Gleaner
Horned Lark	Ground	Lark Sparrow	Ground	Bullock's Oriole	Foliage Gleaner
Mockingbird Family		House Sparrow	Ground	Finch Family	
Northern Mockingbird	Ground	McCown's Longspur	Ground	House Finch	Ground
Brown Thrasher	Ground	Dark-eyed Junco	Ground	American Goldfinch	Foliage Gleaner
Starling Family		Cardinal Family		Pine Siskin	Foliage Gleaner
European Starling	Ground	Northern Cardinal	Ground	Thrush Family	
Pipit Family		Black-headed Grosbeak	Foliage Gleaner	American Robin	Ground
American Pipit	Ground	Painted Bunting	Ground		

These birds eat insects in the spring, and may feed on crops later.

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Where Are the Crop Pests?

- In the air- flying pest insects and birds
- On orchard trees
- On bushes/low growing plants/ground

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Flying Insects?

- - Swallows



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Flying Insects?

- Flycatchers



M. Bolte



N. Uyeda

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats/Scares Away Pest Birds?

- Falcons – Cooper's Hawk, American Kestrels



R. Grayson



Feng Yu

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Orchard Insect Pests? -Nuttall's Woodpeckers



What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Orchard Insect Pests? -Chickadees



When nest boxes were used to increase the density of Great Tits (a relative of chickadees), the apple yield increased by 66%.

Who Eats Insect Pests on Bushes/Low Growing Plants/Ground?

- Bluebirds



Tres Sabores Vineyard



K. Cole



Bluegreen sharpshooter



Sage leafhopper

W. bluebird density increased in vineyards due to nest boxes and they ate 2.4 times more sentinel prey than in the control (Jedlicka et. al 2011).

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Insect Pests on Bushes/Low Growing Plants/Ground

- Scrub Jays and Robins



J. Baumgartner



High Ground Organics

In the sentinel pest experiments where birds are eating the pest, removal was higher in areas close to hedgerows (Garfinkel and Johnson 2015).

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Insect Pests on Bushes/Low Growing Plants/Ground?

- Tanagers, Bluebirds and Mockingbirds



G. Jones

Florida organic farm



D. DeBold

What Farmers Can Do to Make Farms More Bird-Friendly and Resilient

Who Eats Insect Pest Rodents on the Ground?

- Owls, Hawks, Falcons and Eagles



A. Tyler



S. Kross

Learn about Protecting Birds from Predators

Download nest box plans for your region and habitat using

The Cornell Lab of Ornithology

NestWatch

Where Birds Come to Life

HELP MEASURE NATURE'S SUCCESS
nests, clutches, broods, and fledglings

For over a decade people like you have helped scientists by collecting valuable data on the successes and failures of nesting birds.

EXPLORE THESE BIRDS: WE'D LOVE MORE DATA



			
Eastern Bluebird	Tree Swallow	House Wren	Black-capped Chickadee
			
Western Bluebird	American Robin	Eastern Phoebe	Barn Swallow

Photo © [Barbara Dallas](#)

PLANS FOR PREDATOR GUARDS

Stovepipe baffle
This device is made from a piece of stovepipe or PVC pipe that encircles the nest-box pole. It is held in place by hardware cloth and straps.

Noel predator guard
The Noel guard is a rectangular tube of hardware cloth stapled to the front of the nest box. This will make it difficult for predators to reach into the box entrance hole; however, the nest-box occupants can easily come and go.

Conical metal predator guard or collar
This guard works well for boxes that are attached to free-standing poles. The collar is made from a circular piece of galvanized sheet metal that is placed around the pole underneath the nest box.

Stovepipe Baffle
Photo © Bill Griffith, courtesy of Texas Bluebird Society

Noel Guard
Photo © Aab

Even Ospreys Need Protection From Predators

Go to NestWatch - Click on "Learn," go to "All About Birdhouses," then "Plans for Predator Guards."

All About Birds

Topics Search Join Us

The Cornell Lab of Ornithology

All About Birds

Black-capped Chickadee

Overview ID info Life History Maps Sounds



Listen ID info

Adult

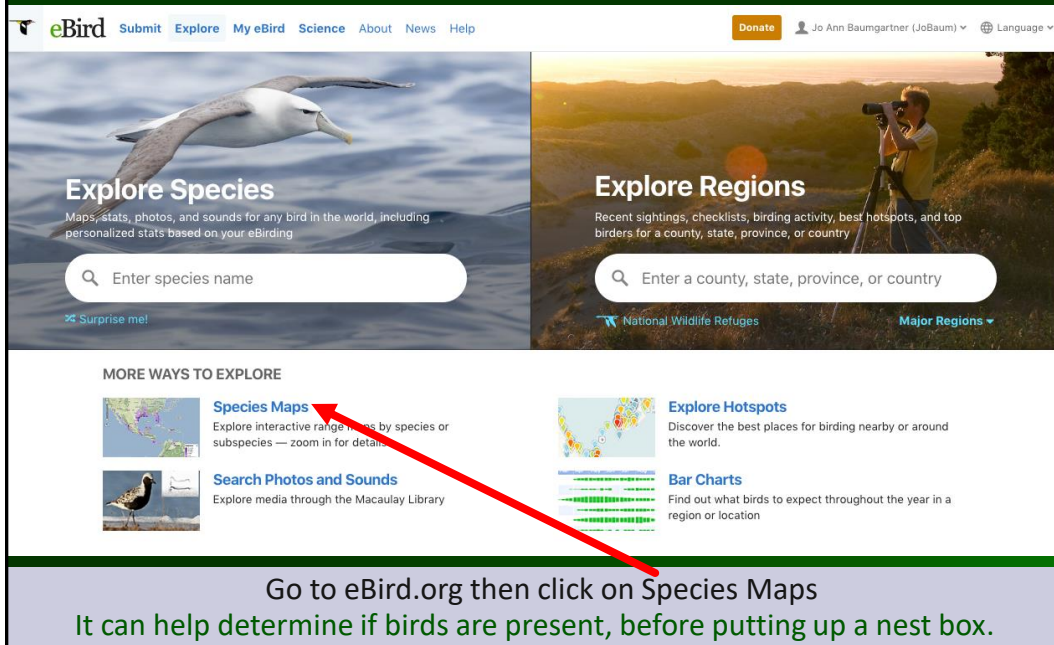
Adult

Adult

Black-capped Chickadee by Linda Petersen

Gives an overview of the bird, and its ID info, life history, maps and songs.

Use eBird.org to Determine If Birds You Want to Attract Live Around You



The screenshot shows the eBird.org homepage. At the top, there's a navigation bar with links: Submit, Explore, My eBird, Science, About, News, Help. A 'Donate' button and a user profile 'Jo Ann Baumgartner (JoBaum)' are on the right. The main content area has two large sections: 'Explore Species' on the left and 'Explore Regions' on the right. Below these, there's a 'MORE WAYS TO EXPLORE' section with four links: 'Species Maps', 'Search Photos and Sounds', 'Explore Hotspots', and 'Bar Charts'. A red arrow points from the 'Species Maps' link to the text below.

Explore Species
Maps, stats, photos, and sounds for any bird in the world, including personalized stats based on your eBirding

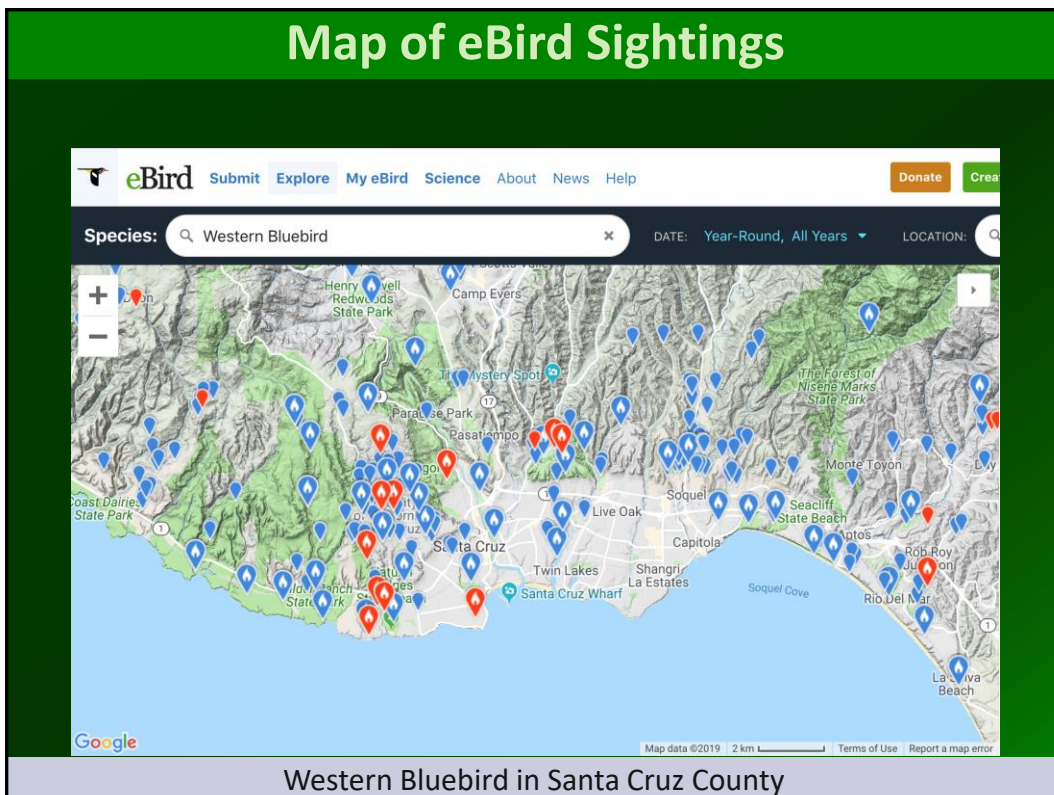
Explore Regions
Recent sightings, checklists, birding activity, best hotspots, and top birders for a county, state, province, or country

MORE WAYS TO EXPLORE

- Species Maps**
Explore interactive range maps by species or subspecies — zoom in for details
- Search Photos and Sounds**
Explore media through the Macaulay Library
- Explore Hotspots**
Discover the best places for birding nearby or around the world.
- Bar Charts**
Find out what birds to expect throughout the year in a region or location

Go to eBird.org then click on Species Maps
It can help determine if birds are present, before putting up a nest box.

Map of eBird Sightings



Conservation Benefits of Supporting Birds on Farms*

- -Birds Are in Decline
- -Climate Change Exacerbates Loss
- -The More Habitat In and Around the Farm, the More Birds Are Generally Supported
- -Ecosystem Services Benefit Humans and Others Alike



*But Some Birds Need Wilder Spaces than Farms

“Conservation will ultimately boil down to rewarding the private landowner who conserves the public interest.”

Aldo Leopold

Conservation Economics, The River of the Mother of God



Growers Can:

- -Use Nest Boxes, Perches and Platforms/Ledges
- -Conserve, Plant and Restore Native Habitat
- -Provide Water Sources
- -Manage and Co-Exist with Pest Birds
- -Take Care When:
 - -Cats and Other Predators Are Present
 - -Using Pesticides
- -Become Involved in Directing Policies that:
 - -Supports More Research on Avian Pest Control
 - -Increases Farm Bill Programs
 - -Supports Migratory Birds Internationally



Supporting Beneficial Birds and Managing Pest Birds



www.WildFarmAlliance.org

www.WildFarmAlliance.org

Wild Farm Alliance Multimedia Story



<http://Bit.ly/BeneficialBirds>

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Help advance a wild and resilient farm movement

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