

## Clean Air And Water, Human Health, And Economic Benefits Go Hand-In-Hand With Bird Conservation

*How bird conservation benefits some of the things Americans value most.*

### Guidelines for Use of Bird Conservation Relevancy Examples

Actions that benefit birds can have far-reaching benefits for human health, economic interests, and other outcomes valued by people. The bird conservation community can strengthen partnerships by communicating these areas of overlap. To encourage these discussions, the U.S. NABCI Committee has gathered dozens of published, mostly peer-reviewed studies linking birds and bird conservation with economic benefits, clean air, clean water, and better human health. These case studies can provide a “hook” for engaging decision makers, administrators, and the public within but also, crucially, outside the bird conservation community. Different examples will resonate with different groups, and we have tried to draw examples from many different types of birds, spheres of interest, and geographies.

The examples provided are not intended to serve as a stand-alone communication tool; rather, these can be used to initiate conversations about how we can work with specific individuals or organizations for mutual benefit. It is critical to know your audience and understand their interests before opening these conversations. We hope that you can use these messages as a tool to aid in crafting a more targeted conservation message. Here’s how we recommend you use this document:

1. Research your audience. What are their priorities and interests?
2. Select a few examples that will resonate most strongly. (Keyword “tags” are provided to facilitate this search).
3. Cut and paste these (re-wording or expanding them, as appropriate) into either the developed template or a vehicle of your choosing.
4. Use the examples as a launching point for discussions on the ways that your interests overlap.

This is a living document. We anticipate that in the coming months or years, additional examples will be published that can easily be incorporated and successfully used to communicate the message that birds and people can thrive together.

# The Economic Benefits of Bird Conservation

**Bird watching and birding related tourism generates billions in economic activity.** About 46 million people in the U.S. – nearly one in five adults – watch birds and, spending about \$40 billion annually, create more than 860,000 jobs. With side benefits and associated economic impacts, bird-watching is a \$107-billion-industry, positively impacting 47 million people per year.

(1) Pullis La Rouche, G. 2006. *Birding in the United States: a demographic and economic analysis*. Pages 841-846 in: G.C. Boere, C.A. Galbraith and D.A. Stroud, editors. *Waterbirds Around the World*. The Stationery Office, Edinburgh, UK. [http://jncc.defra.gov.uk/PDF/pub07\\_waterbirds\\_part6.2.5.pdf](http://jncc.defra.gov.uk/PDF/pub07_waterbirds_part6.2.5.pdf).

(2) U.S. Fish and Wildlife Service. 2012. *The 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation National Overview*. <http://digitalmedia.fws.gov/cdm/ref/collection/document/id/859>.

TAGS: Bird, Bird Watching, Community, Economic Benefit, Jobs, Recreation

**Nearly 5 million Californians go bird watching each year**, with 2.3 million people travelling to do so, generating \$3.8 billion dollars in economic impact.

United States Department of Interior United States Fish and Wildlife Service, United States Department of Commerce, Bureau of the Census (Washington, DC). 2012. *2011 National survey of fishing, hunting, and wildlife associated recreation: national overview*. <http://www.census.gov/prod/2012pubs/fhw11-nat.pdf>.

TAGS: Bird, Bird Watching, Community, Economic Benefit, Jobs, Recreation, California

**One Black-backed Oriole at a Pennsylvania feeder in 2017 attracted nearly 2,000 visitors.** This was just the second documented sighting of this species in the U.S. The bird stayed for 3 months. Researchers estimated the economic impact at about \$218,000 for hotels, restaurants, and other travel-related costs and services.

Callaghan, C.T., M. Slater, R.E. Major, M. Morrison, J.M. Martin, and R.T. Kingsford. 2017. *Travelling birds generate eco-travellers: The economic potential of vagrant birdwatching*, *Human Dimensions of Wildlife*. <http://unsworks.unsw.edu.au/fapi/datastream/unsworks:48848/bina08423ca-62c9-4c6f-bcbc-8ea34064b74a?view=true>

TAGS: Bird, Bird Watching, Community, Economic Benefit, Jobs, Recreation, Pennsylvania

**National wildlife refuges are economic engines.** The first refuge, Pelican Island, Florida, was established to protect egrets and other birds. NWRs now encompass 150 million acres, exist in every U.S. state and territory, and attract 50 million visitors per year, generating 35,000 jobs and \$2.4 billion for local economies.

Carver, E. and J. Caudill. 2013. *Banking on nature: the economic benefits to local communities of National Wildlife Refuge visitation*. US Fish & Wildlife Service. [www.fws.gov/refuges/about/refugereports/pdfs/BankingOnNature2013.pdf](http://www.fws.gov/refuges/about/refugereports/pdfs/BankingOnNature2013.pdf).

TAGS: Bird, Bird Watching, Community, Hunting, Economic Benefit, Jobs, Recreation, Water, Wetland, Florida

**Louisiana generated nearly \$1 billion through wildlife viewing in 2011, ranking in the top 20 states in money spent on wildlife viewing.** Over 14,000 jobs in the state were positively affected. With increasing numbers of birder visitors and birding festivals, the state is poised to continue its birding-related economic growth.

Caudill, J. 2014. *Wildlife Watching in the U.S.: The Economic Impacts on National and State Economies in 2011: Addendum to the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington DC: U.S. Government Printing Office.

TAGS: Bird, Bird Watching, Coastal, Community, Economic Benefit, Habitat, Jobs, Recreation, Soil, Louisiana

**Habitat management and wildlife-associated recreation contributed \$53.4 million to the Merced County, California,** economy and accounted for about 1,100 jobs.

Weissman, K.G. *Land use and economics study grassland ecological area Merced County, California. Los Banos (CA) Grassland Water District.* 35 p. Available from: [weissman@traenviro.com](mailto:weissman@traenviro.com).

TAGS: Bird, Bird Watching, Community, Economic Benefit, Habitat, Jobs, Recreation, Soil, California

**Bird hunting generates billions in economic activity.** The U.S. Fish and Wildlife Service reports nearly 14 million people age 16 or older hunt each year, spending \$38 billion on all species (\$6.5 billion for bird hunting) for travel, equipment, licenses, and other costs. Total economic activity related to hunting is nearly \$100 billion.

Southwick Associates. 2012. *Hunting in America: An Economic Force for Conservation*. Produced for the National Shooting Sports Foundation in partnership with the Association of Fish and Wildlife Agencies. <https://www.fs.fed.us/biology/resources/pubs/wildlife/HuntingEconomicImpacts-NSSF-Southwick.pdf>.

TAGS: Bird, Community, Economic Benefit, Habitat, Hunting, Jobs, Recreation, Wetland

**Healthy populations of a single species can generate as much as \$26 million annually.** Hunters and wildlife watchers of the charismatic Northern Pintail on its wintering grounds spent money on area hotels, restaurants, sporting goods stores, gas stations, and many other local businesses.

Thogmartin et al., in preparation, pers. comm.

TAGS: Bird, Community, Economic Benefit, Habitat, Hunting, Jobs, Recreation, Wetland

## Natural Areas and the Birds Using Them Generate an Economic Premium

**Protected habitat, and the birds using it, enhances property values.** Texas Tech University researchers found that the presence of birds and greenspace increased property values as much as \$32,000. More bird species in an area meant higher property values. Even the presence of a single uncommon species yielded higher prices. Researchers in Massachusetts found that property located even slightly closer to a popular bird-watching spot also generated a significant property value premium.

Marzluff, J.W. 2014. *Welcome to Suburbia: Sharing our neighborhoods with wrens, robins, woodpeckers, and other wildlife*. Yale University Press. <https://yalebooks.yale.edu/book/9780300197075/welcome-suburbia>.

Neumann, B.C., K.J. Boyle, and K.P. Bell. 2009. Property price effects of a national wildlife refuge: Great Meadows National Wildlife Refuge in Massachusetts. *Land Use Policy* 26:1011-19. <https://www.westfordma.gov/DocumentCenter/View/2443/Great-Meadows-National-Wildlife-Refuge-2009-Report-PDF>.

TAGS: Bird, Bird Watching, Community, Economic Benefit, Forest, Habitat, Infrastructure, Recreation

**Protected areas around lakes, streams, and rivers are good for the economy and provide crucial bird habitat.** In 2016, the Kittatinny Coalition in Pennsylvania completed a Return on Environment Study for Dauphin County, the source of water for the state capital, Harrisburg. The study showed the annual benefits for stormwater mitigation (\$11.4M saved), nutrient uptake (\$2.0M), groundwater recharge (\$4.0M), pollination (\$2.4M), erosion prevention (\$0.2M), and carbon sequestration (\$0.5M).

Dierolf, T., J. Ortiz, T. Poole T., and J. Rogers. 2016. *Capital region water, Harrisburg, Pennsylvania. Capital Region Water, Harrisburg, PA.* [www.kittatinnyridge.org](http://www.kittatinnyridge.org).

TAGS: Community, Economic Benefit, Flood, Forest, Habitat, Human Health, Infrastructure, Jobs, Pollinate, Pollution, Soil, Water, Wetland, Pennsylvania

**The most cost-effective means of providing clean water to New York City is protecting land around rivers, lakes and streams.** Maintaining clean, safe drinking water can be expensive. Estimated costs for developing a new filtration plant for New York City run to \$6-8 billion, plus an additional \$100 million in annual operating costs. Instead, the city implemented long-term protections of land around rivers, lakes, and streams to ensure a clean source of water for 9 million users—nearly half of the state’s population. The program also provides opportunities for camping, hunting, and fishing, protects wildlife habitat, and saves billions of dollars for rate water users.

American Water Resources Association. 1999. *Watershed management tactics in the New York City watershed. Water Resources IMPACT 1.* <http://www.jstor.org/stable/wateresoimpa.1.issue-5>.

TAGS: Bird, Community, Economic Benefit, Flood, Forest, Habitat, Human Health, Hunting, Infrastructure, , Pollution, Recreation, Soil, Water, Wetland, New York

**Conservation investments via the Conservation Reserve Program in the Farm Bill provide clean soil and more water.** CRP dollars provide a 300%+ return in flood mitigation, clean drinking water, and clean water for fishing, boating, and swimming – all while improving bird habitat.

North American Bird Conservation Initiative, U.S. Committee. 2017. *The State of the Birds 2017: A Farm Bill Special Report.* Cornell Lab of Ornithology, Ithaca, N.Y. <http://www.stateofthebirds.org/2017/wp-content/uploads/2016/04/2017-state-of-the-birds-farm-bill.pdf>.

Tags: Community, Economic Benefit, Fishing, Flood, Habitat, Human Health, Hunting, Infrastructure, Pollution, Recreation, Soil, Water, Wetland

**Wetlands, which provide critical habitat for waterfowl and other waterbirds, provide \$3,273 per acre per year of total economic value** via flood control, fishing, water treatment, biodiversity habitat nursery (including wetland dependent birds), climate regulation, hunting, water supply, raw materials, fuelwood, aesthetics, and recreation.

De Groot, R. M. Stuij, M. Finlayson, and N. Davidson. 2006. *Valuing wetlands: guidance for valuing the benefits derived from wetland ecosystem services.* (Gland Switzerland, Montreal Canada). Secretariat of the Convention on Wetlands, Secretariat of the Convention on Biological Diversity. Ramsar Technical Report No. 3. CBD Technical Series No. 27. 46 p. <https://www.cbd.int/doc/publications/cbd-ts-27.pdf>.

**TAGS:** Bird, Bird Watching, Community, Economic Benefit, Flood, Habitat, Human Health, Hunting, Jobs, Pollution, Recreation, Soil, Water, Wetland

**The USDA Sodsaver Program is a money saver.** By leaving more prairie uncultivated in order to support wildlife, the savings to taxpayers in reduced federal crop insurance payouts is expected to be \$1.4 billion over 10 years.

*North American Bird Conservation Initiative, U.S. Committee, 2013. The State of the Birds 2013: Report on Private Lands. U.S. Department of Interior, Washington, DC.*  
[http://www.stateofthebirds.org/2013/2013%20State%20of%20the%20Birds\\_low-res.pdf](http://www.stateofthebirds.org/2013/2013%20State%20of%20the%20Birds_low-res.pdf).

**TAGS:** Agriculture, Bird, Economic Benefit, Habitat, Jobs, Soil

## Birds Reduce Pests and Provide Critical Services to Agriculture, Timber, and Other Industries

**Birds protect valuable timber and reduce the need for insecticides.** Birds can mitigate damage on spruce tree plantations by reducing the intensity of spruce budworm outbreaks and produce control levels comparable to insecticides. In Washington, avian control of spruce budworm was calculated to be worth at least \$570 per square mile per year.

<http://www.ingentaconnect.com/content/saf/fs/1983/00000029/00000004/art00015>.

**TAGS:** Agriculture, Bird, Economic Benefit, Forest, Habitat, Pests, Washington

**Clark's Nutcrackers provide no-cost seed dispersal.** The estimated investment needed to replace this species' seed dispersal of whitebark pine is as much as \$1,000 per acre, or about \$13.9 billion across the range of whitebark pine in the U.S.

[https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=2345&context=icwdm\\_usdanwrc](https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=2345&context=icwdm_usdanwrc).

**TAGS:** Agriculture, Bird, Economic Benefit, Forest, Habitat

**Birds control insect pests.** Of the 10,000+ species of birds in the world, about 5,700 consume invertebrates.

Şekercioğlu, C.H., G.C. Daily, and P.R. Ehrlich. 2004. Ecosystem consequences of bird declines. *Proceedings of the National Academy of Sciences* 101:18042–18047. <http://www.pnas.org/content/101/52/18042.abstract>.

**TAGS:** Agriculture, Bird, Economic Benefit, Forest, Habitat, Pests

**Birds keep economically important forests healthy.** The global value of services and products from the world's temperate and boreal forests is estimated at \$1.385 trillion annually (about \$90 billion in the U.S.). Birds play a vital role in keeping this crucial resource healthy, by controlling insect pests and dispersing seeds.

Costanza, R., d'Arge, R., R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton and M. van den Belt. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387:253–260. doi:10.1038/387253a0. <https://www.nature.com/articles/387253a0>.

**TAGS:** Agriculture, Bird, Economic Benefit, Forest, Habitat

**Birds play a key role in reducing damage to trees and crops.** Many studies have shown that reducing or excluding birds increases insects and leaf damage to trees. Bark-foraging birds may slow the spread of lethal pests. In some cases, the effect was equal to that of the use of pesticides, without the negative side effects. Birds control insect and rodent pests and damage to crops in working farms and ranches growing apples, corn, broccoli, kale, cacao, coffee, oil palm, grapes, rice, alfalfa, wheat, clover, oats, and dates – crops collectively worth billions of dollars per year in the U.S. and elsewhere.

*Sekercioglu, C.H., D.G. Wenny, and C.J. Whelan. 2017. Why Birds Matter. Univ. of Chicago. Pp. 53-55.*

<http://press.uchicago.edu/ucp/books/book/chicago/W/bo23996771.html>

TAGS: Agriculture, Bird, Economic Benefit, Forest, Habitat, Human Health, Pests, Pollution, Soil

**Bird habitat near vineyards may increase grape harvests.** Researchers found that birds can respond very quickly to simulated pest outbreaks and can consume up to 90% of harmful insect larvae. Vineyard managers can take advantage of pest control by songbirds to manage pests that damage grapes.

*Howard, K., and M.D. Johnson. 2014. Effects of natural habitat on pest control in California Vineyards. Western Birds 45:276–283. [https://www2.humboldt.edu/wildlife/faculty/johnson/pdf/WB-45\(4\)-Howard-Johnson.pdf](https://www2.humboldt.edu/wildlife/faculty/johnson/pdf/WB-45(4)-Howard-Johnson.pdf)*

TAGS: Agriculture, Bird, Economic Benefit, Forest, Habitat, Jobs, Pests

**Rodents may be deterred from damaging crops by the presence of predatory birds.** When challenged by the threat of avian predation, a rodent pest species spent less time foraging (and therefore less time damaging crops).

*Abramsky, Z., M.L. Rosenzweig, and A. Subach. 2002. The costs of apprehensive foraging. Ecology 83:1330–1340. [http://onlinelibrary.wiley.com/doi/10.1890/0012-9658\(2002\)083\[1330:TCOA F\]2.0.CO;2/full](http://onlinelibrary.wiley.com/doi/10.1890/0012-9658(2002)083[1330:TCOA F]2.0.CO;2/full)*

TAGS: Agriculture, Bird, Economic Benefit, Jobs, Pests

**Farmers that invest in improvements to waterfowl habitat on their property can see financial returns from waterfowl hunting leases.** More than 50% of Oregon farmers with waterfowl habitat enjoyed this privilege.

*Raymond R, Johnson RL, Cleaves D. 1991. Forest Research Lab, College of Forestry. Oregon State Univ. The market for waterfowl hunting on private agricultural land in Western Oregon. Research Bulletin 70.*

[http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/7968/RB\\_no\\_70.pdf;sequence=1.](http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/7968/RB_no_70.pdf;sequence=1)

TAGS: Agriculture, Bird, Economic Benefit, Habitat, Hunting, Jobs, Recreation, Oregon

**Best practices in rice production can benefit birds.** The U.S. (which grows about 2.5 million metric tons/year of rice) is second only to Brazil. Rice is one of the world's most important crops, and certified rice -- primarily grown in shallow water that attracts a variety of birds -- can increase income to rice producers. There is an annual birding festival in Louisiana where birdwatchers ride on rice harvesting machines to see the birds that are flushed by the machines.

*U.S. Forest Service International Program*

TAGS: Agriculture, Bird, Economic Benefit, Habitat, Jobs, Louisiana

**Worldwide, about 2,000 species of birds play some role in flower pollination.** About 4% plant species in the world are pollinated by birds. White-winged Doves are important pollinators of saguaro cactus, a big economic resource (via tourism) in Arizona. Crops such as banana, papaya, and nutmeg are pollinated mainly by birds.

(1) USDA Forest Service. <https://www.fs.fed.us/wildflowers/pollinators/animals/birds.shtml>.

(2) Audubon. <http://www.audubon.org/news/what-do-birds-and-bees-have-do-global-food-supply>.

(3) Renner, S.S., and R.E. Ricklefs. 1995. Dioecy and its correlates in the flowering plants. *American Journal of Botany* 82:596-606. <http://www.jstor.org/stable/2445418>.

TAGS: Agriculture, Bird, Economic Benefit, Habitat, Jobs, Pollinate, Arizona

**Fruit- and seed-eating birds disperse seeds of nearly 70,000 plant species from 240 plant families** – about 25% of all seed plant species. Birds disperse seeds much more widely than insects, mammals, or wind. Waterbirds disperse the seeds of wetland plants over great distances into favorable areas or unconnected sites, increasing the plant diversity of wetlands.

Sekercioglu, C.H., D.G. Wenny, and C.J. Whelan. 2017. *Why Birds Matter*. Univ. of Chicago. Pp.110-122.

<http://press.uchicago.edu/ucp/books/book/chicago/W/bo23996771.html>

TAGS: Agriculture, Bird, Community, Economic Benefit, Forest, Habitat

**Certifying grass-fed beef can contribute to improved incomes** by increasing prices or access to markets and help ranchers resist pressures to convert their rangelands to monocultures. Grasslands, and the birds that use them, are threatened primarily by conversion to crops: corn and soybeans in the U.S., irrigated agriculture in Mexico, and soybeans, pine, and eucalyptus in southern South America.

*U.S. Forest Service International Program*

TAGS: Agriculture, Bird, Economic Benefit, Habitat, Jobs, Pests, Pollution

## Vibrant Bird Habitat is Linked to Human Health

**Birds control pests and reduce human diseases.** Rodents and insects carry diseases or hosts that transmit illnesses such as plague, malaria, dengue fever, and dozens of others. Insectivorous birds and raptors help keep a number of human diseases in check by consuming the rodents or insects.

Whelan, C.J., D.G. Wenny, and R. Marquis. 2008. *Ecosystem Services Provided by Birds*. *Annals of the New York Academy of Sciences* 1134:25–60. <http://onlinelibrary.wiley.com/doi/10.1196/annals.1439.003/full>

TAGS: Bird, Community, Habitat, Human Health, Pests

**Birds reduce pests that are potentially harmful to humans.** The U.S. Commonwealth islands of Saipan and Guam provide an example of a natural experiment. On Guam, which has very few native birds, the density of spiders is up to 40 times greater than Saipan, an island with a relatively intact bird community. Seed dispersal of native plants is also much higher on Saipan compared to Guam.

Rogers, H., J.H.R. Lambers, R. Miller, and J.J. Tewksbury. 2011. *Natural experiment demonstrates top-down control of spiders by birds on a landscape level*. *PLoS ONE* 7:e43446.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0043446>.

TAGS: Bird, Community, Habitat, Human Health, Pests

**Human health is linked to clean air and water.** A growing body of evidence shows that human health is linked to clean air and water. Some studies have demonstrated that loss of biodiversity and wildlife habitat directly leads to an increase in infectious diseases.

(1) Rockefeller Foundation 2016. *Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health.* *The Lancet.* [www.thelancet.com/commissions/planetary-health](http://www.thelancet.com/commissions/planetary-health).

(2) Galvani A.P., C.T. Bauch, M. Anand, B.H. Singer, and S.A. Levin. 2016. *Human–environment interactions in population and ecosystem health.* *PNAS* 113:14502-14506. [www.pnas.org/content/113/51/14502.extract](http://www.pnas.org/content/113/51/14502.extract).

(3) Faust, C.L., A.P. Dobson, N. Gottdenker, L.S.P. Bloomfield, H.I. McCallum, T.R. Gillespie, M. Diuk-Wasser, and R.K. Plowright. 2017. *Null expectations for disease dynamics in shrinking habitat: dilution or amplification?* *Philosophical Transactions of the Royal Society B* 372:1722. [www.ncbi.nlm.nih.gov/pubmed/28438921](http://www.ncbi.nlm.nih.gov/pubmed/28438921).

TAGS: Community, Habitat, Human Health

**Birds are natural barometers.** When wild bird populations decline, it's often an indication of pollutant or contamination problems that trigger human health issues. For example, declines in robins, waterfowl, pelicans, and birds of prey were some of the first clues about the dangers of contamination from heavy metals and DDT.

Ishizuka, M., and W.S. Darwish. Editors. 2015. *Proceedings of the Seventh International Toxicology Symposium.* Johannesburg, South Africa. <http://aa.vetmed.hokudai.ac.jp/en/symposium-index/7th-symposium/>

TAGS: Bird, Human Health, Pollution

**Bird song can improve your mood.** Several recent studies have shown that listening to bird songs and calls can help improve a person's mood and attention.

(1) Alvarsson, J.J., S. Wien, and M.E. Nilsson. 2010. *Stress recovery during exposure to nature sound and environmental noise.* *International Journal of Environmental Research and Public Health* 7:1036-1046

<http://www.sciencedirect.com/science/article/pii/S0272494413000650?via%3Dihub>

(2) Payne, S.R. 2012. *The production of a perceived restorativeness soundscape scale.* *Applied Acoustics* 74:255-263.

[https://ac.els-cdn.com/S0272494410000204/1-s2.0-S0272494410000204-main.pdf?\\_tid=7b8f253c-f267-11e7-a34f-00000aab0f27&acdnat=1515191373\\_58319be1fc0abeba03c18b4a1a79ee56](https://ac.els-cdn.com/S0272494410000204/1-s2.0-S0272494410000204-main.pdf?_tid=7b8f253c-f267-11e7-a34f-00000aab0f27&acdnat=1515191373_58319be1fc0abeba03c18b4a1a79ee56).

TAGS: Bird, Community, Habitat, Human Health

## Protecting Coastlines and Wetlands Benefits People and Birds

**Coastal wetlands and estuaries provide protection to roads, buildings, and public works experiencing major weather events.** Coastal estuaries, which provide great habitat for birds and other wildlife, also provide protection for humans against hurricane storm surges and flooding. Hurricane Sandy in 2012 caused \$70 billion in property damage. Loss of 1 ha of coastal wetlands corresponds to an average increase in storm damage of \$13,000. Coastal wetlands provide up to \$23.2 billion per year in storm protection services in the U.S.



Costanza, R., O. Pérez-Maqueo, M. Luisa Martinez, P. Sutton, S.J. Anderson, and K. Mulder. 2008. The value of coastal wetlands for hurricane protection. *Ambio* 37:241-248. <https://www.ncbi.nlm.nih.gov/pubmed/18686502>

**TAGS:** Bird, Coastal, Community, Economic Benefit, Flood, Habitat, Infrastructure, Jobs, Recreation, Soil, Water, Wetland

**Protection of coastal forests is crucial for ensuring longevity of our coastal communities, where trees reduce storm surge and saltwater intrusion,** and they bolster the resilience of migratory bird populations that rely on these forests as stopover sites during migration. In Louisiana, Barrier Island Live Oak Forest and Coastal Live Oak-Hackberry Forest are critically imperiled habitats.

(1) Holcomb, S.R., A.A. Bass, C.S. Reid, M.A. Seymour, N.F. Lorenz, B.B. Gregory, S.M. Javed, and K.F. Balkum. 2015. Louisiana Wildlife Action Plan. Louisiana Dept. of Wildlife and Fisheries, Baton Rouge. 661 pp. [http://www.wlf.louisiana.gov/sites/default/files/pdf/page\\_wildlife/32937-Wildlife%20Action%20Plan/2\\_inside\\_cover\\_page\\_2017.pdf](http://www.wlf.louisiana.gov/sites/default/files/pdf/page_wildlife/32937-Wildlife%20Action%20Plan/2_inside_cover_page_2017.pdf).

(2) Mehlman, D.W., S.E. Mabey, D.N. Ewert, C. Duncan, B. Abel, D. Cimprich, R.D. Sutter, and M. Woodrey. 2005. Conserving stopover sites for forest-dwelling migratory landbirds. *The Auk* 122:1281-1290. [http://www.bioone.org/doi/full/10.1642/0004-8038\(2005\)122%5B1281%3ACSSFFM%5D2.0.CO%3B2](http://www.bioone.org/doi/full/10.1642/0004-8038(2005)122%5B1281%3ACSSFFM%5D2.0.CO%3B2).

**TAGS:** Bird, Coastal, Community, Economic Benefit, Flood, Habitat, Infrastructure, Jobs, Recreation, Soil, Water, Wetland, Louisiana

**Protected Louisiana coast provides economic benefits.** Louisiana has lost 2,000 square miles of coastal land since the 1930's. Recent protection projects benefitted 36,000 acres and more than 60 miles of barrier islands. Protecting habitat for birds also protected private land, roads, buildings, and public property.

Coastal Protection and Restoration Authority. 2017. Louisiana's Comprehensive Master Plan for a Sustainable Coast. Baton Rouge, LA, Office of Technological Services-State Printing. 184 pp. <http://coastal.la.gov/wp-content/uploads/2017/01/DRAFT-2017-Coastal-Master-Plan.pdf>.

**TAGS:** Bird, Coastal, Community, Economic Benefit, Flood, Habitat, Infrastructure, Jobs, Recreation, Soil, Water, Wetland, Louisiana

**Saltmarsh habitat is an important economic force.** More than 2/3 of the U.S. commercial fish catch, valued at more than \$16 billion, is comprised of fish dependent on estuaries or salt marshes. Estuarine fish species comprise about 80% of recreational fish harvested in the U.S. These estuaries and marshes also provide important bird habitat for certain species.

Lellis-Dibble, K.A., K.E. McGlynn, and T.E. Bigford. 2008. Estuarine and shellfish species in U.S. commercial and recreational fisheries. U.S. Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-90. <https://spo.nmfs.noaa.gov/tm/TM90.pdf>.

**TAGS:** Coastal, Commercial Fish, Community, Economic Benefit, Flood, Infrastructure, Jobs, Recreation, Water, Wetland

# Conserving Water Helps People and Birds

**Conservation lands store billions of gallons of water.** Conservation Reserve and Wetland Reserve lands in the Prairie Pothole Region reduced soil loss by 2 million tons per year – a benefit of nearly \$7 million – while at the same time providing important habitat for birds. Conservation Reserve and Wetlands Reserve program lands provide water catchments to intercept heavy rain, reduce flooding, and storing 150 billion gallons of water per year to improve this habitat.

Gleason, R.A., M.K. Laubhan, B.A. Tangen, and K.E. Kermes. 2008. *Ecosystem services derived from Wetland conservation practices in the United States Prairie Pothole Region with an emphasis on the U.S. Department of Agriculture Conservation Reserve and Wetlands Reserve Programs*. USGS Northern Prairie Wildlife Research Center 110. <http://digitalcommons.unl.edu/usgsnpwrc/110>.

TAGS: Agriculture, Community, Economic Benefit, Flood, Human Health, Infrastructure, Pollution, Soil, Water, Wetland

## Examples from Around the World

**North American-breeding birds that migrate to the Tropics are an important control on the coffee berry borer,** the world's primary coffee pest. In several studies, coffee plants that didn't allow access to foraging birds had significantly higher damage than other plants. In Costa Rica, birds reduce this beetle's infestation by about 50% and prevent \$30–\$122 per acre per year in damage -- a benefit per plantation on par with the average annual income of a Costa Rican citizen.

(1) Kellerman, J.L., M.D. Johnson, A.M. Stercho, and S.C. Hackett. 2008. *Ecological and economic services provided by birds on Jamaican Blue Mountain Coffee Farms*. *Conservation Biology* 22:1177–1185. doi:10.1111/j.1523-1739.2008.00968.x. <http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2008.00968.x/full>.

(2) Karp, D.S., C.D. Mendenhall, R. Figueroa Sandí, N. Chaumont, P.R. Ehrlich, E.A. Hadly, and G.C. Daily. 2013. *Forest bolsters bird abundance, pest control and coffee yield*. *Ecology Letters* 16: 1339–1347. doi: 10.1111/ele.12173. <http://onlinelibrary.wiley.com/doi/10.1111/ele.12173/full>.

TAGS: Agriculture, Bird, Economic Benefit, Forest, Habitat, Jobs, Pests

**The Golden-winged Warbler, which nests in the U.S. and Canada but winters in Central America, provides pest control for coffee farmers.** The area in Costa Rica with the highest Golden-winged Warbler density is also the only region in the country that is free of coffee-boring beetles. The area is 85% forest, most of which is suitable for the species. Payments to landowners for protecting forests provide an incentive to become part of a conservation community.

*U.S. Forest Service International Program*

TAGS: Agriculture, Bird, Economic Benefit, Habitat, Jobs, Pests

**Birds control coffee insect pests and increase harvest value in Jamaica.** Bird-provided pest control contributed about \$122 per acre per year, a value equal to 10% of the per capita gross national income in Jamaica.

Johnson, M.D., J. Kellermann, and A.M. Stercho. 2010. *Pest control services by birds in shade and sun coffee in Jamaica*. *Animal Conservation* 13:140-47. <http://esanalysis.colmex.mx/Sorted%20Papers/2010/2010%20USA%20-CS%20JAM,%20Biodiv%20Econ.pdf>

TAGS: Agriculture, Bird, Economic Benefit, Jobs, Pests, Jamaica

**Bird Watching in Turkey generates significant economic value.** The recreational value of one national park in Turkey was estimated at \$103M per year.

Gürlük, S, and E. Rehber. 2008. A travel cost study to estimate recreational value for a bird refuge at Lake Manyas, Turkey. *Journal of Environmental Management* 88:1350-1360. <http://www.sciencedirect.com/science/article/pii/S0301479707002472>.

TAGS: Bird, Bird Watching, Economic Benefit, Habitat, Jobs, Recreation, Turkey

**Researchers in Sweden estimated the cost of replacing seed dispersal services by Eurasian Jays of economically/ecologically important trees with human methods to be between \$4,900-\$22,500/pair.**

Hougnér, C., J. Colding, and T. Söderqvist. 2006. Economic valuation of a seed dispersal service in the Stockholm National Urban Park, Sweden. *Ecological Economics* 59:364-74. <http://www.sciencedirect.com/science/article/pii/S0921800905005124>.

TAGS: Agriculture, Bird, Economic Benefit, Forest, Habitat, Sweden

**Falcons control vineyard pests in New Zealand.** Falcons were associated with a 55% reduction in the number of grapes destroyed by birds. One falcon could potentially result in savings of up to \$50 per acre.

Kross, S.M., J.M Tylianakis, and X.J. Nelson. 2012. Effects of introducing threatened falcons into vineyards on abundance of Passeriformes and bird damage to grapes. *Conservation Biology* 26:142–149. doi:10.1111/j.1523-1739.2011.01756.x. <http://onlinelibrary.wiley.com/doi/10.1111/j.1523-1739.2011.01756.x/full>

TAGS: Agriculture, Bird, Economic Benefit, Forest, Habitat, Jobs, Pests, New Zealand

**In Spain and India, vultures save people money and reduce disease.** Without vultures, the carcasses of free-ranging livestock must be disposed of professionally, which costs money and which also involves an incineration that emits about 77 tons of carbon. The disappearance of vultures in India led to 48,000 human deaths from rabies and cost \$34 billion to the economy. Scavengers such as feral dogs, which may carry rabies, and rats, which may carry bubonic plague and other diseases, have also increased. The potential human health impact was estimated at \$2.4 billion.

(1) Markandya, A., T. Taylor, A. Longoc, M.N. Murty, S. Murtyd, and K. Dhavalad. 2008. Counting the cost of vulture decline—An appraisal of the human health and other benefits of vultures in India. *Ecological Economics* 67:194-204. <https://doi.org/10.1016/j.ecolecon.2008.04.020>.

(2) Pain, D.J., A.A. Cunningham, P.F. Donald, J.W. Duckworth, D.C. Houston, T. Katzner, J. Parry-Jones, C Poole, V. Prakash, P. Round, and R. Timmins. 2003. Causes and effects of temporospatial declines of Gyps Vultures in Asia. *Conservation Biology*, 17: 661–671. doi:10.1046/j.1523-1739.2003.01740.x <http://onlinelibrary.wiley.com/doi/10.1046/j.1523-1739.2003.01740.x/full>.

TAGS: Bird, Community, Economic Benefit, Human Health, Hunting, Jobs, Pests, Pollution, India, Spain

**Protecting mangroves reduces pollution and poverty.** Protecting habitats such as mangrove swamps has reduced pollution, boosted economic activity, and reduced poverty by providing a sustainable, local fishery, along with critical bird habitat.

Barbier, E.B., S.D. Hacker, C. Kennedy, E.W. Kock, A.C. Stier, and B.R. Stillman. 2011. *The value of*

estuarine and coastal ecosystem services. *Ecological Monographs* 81:169-193. <http://bioeeos660-f14-bowen.wikispaces.umb.edu/file/view/Barbier+2011.pdf>

**TAGS:** Bird, Coastal, Commercial Fish, Community, Economic Benefit, Flood, Habitat, Infrastructure, Jobs, Pollution, Recreation, Soil, Water, Wetland

**Mangroves sequester carbon, protect coasts against storms and sea-level rise, and support important water bird populations.** Shorebirds use a variety of coastal habitats, including mudflats, sandflats, and rocky shorelines, but mangroves are a key habitat for many species.

Duke, N.C., J.-O. Meynecke, S. Dittmann, A.M. Ellison, K. Anger, U. Berger, S. Cannicci, K. Diele, K.C. Ewel, C.D. Field, N. Koedam, S.Y. Lee, C. Marchand, I. Nordhaus, and F. Dahdouh-Guebas. 2007. A World Without Mangroves? *Science* 317:41-42. doi:10.1126/science.317.5834.41. <http://science.sciencemag.org/content/317/5834/41.2>.

**TAGS:** Bird, Coastal, Economic Benefit, Flood, Habitat, Infrastructure, Jobs, Pollution, Recreation, Soil, Water, Wetland

The U.S. North American Bird Conservation Initiative (NABCI) Committee is a partnership of state and federal government agencies and private organizations in the United States working to ensure the long-term health of North America's native bird populations and the habitats that support them. The vision of the committee is that healthy and abundant populations of North American birds are valued by future generations and sustained by habitats that benefit birds and people.

Through NABCI, public, private, and non-profit organizations work to address shared conservation challenges and priorities. NABCI also collaborates with its counterparts in Canada and Mexico to ensure that this hemispheric shared resource is fully protected.

---

For More Information  
Judith Scarl, Ph.D., U.S. NABCI Coordinator, [jscarl@fishwildlife.org](mailto:jscarl@fishwildlife.org)  
<http://nabci-us.org/>