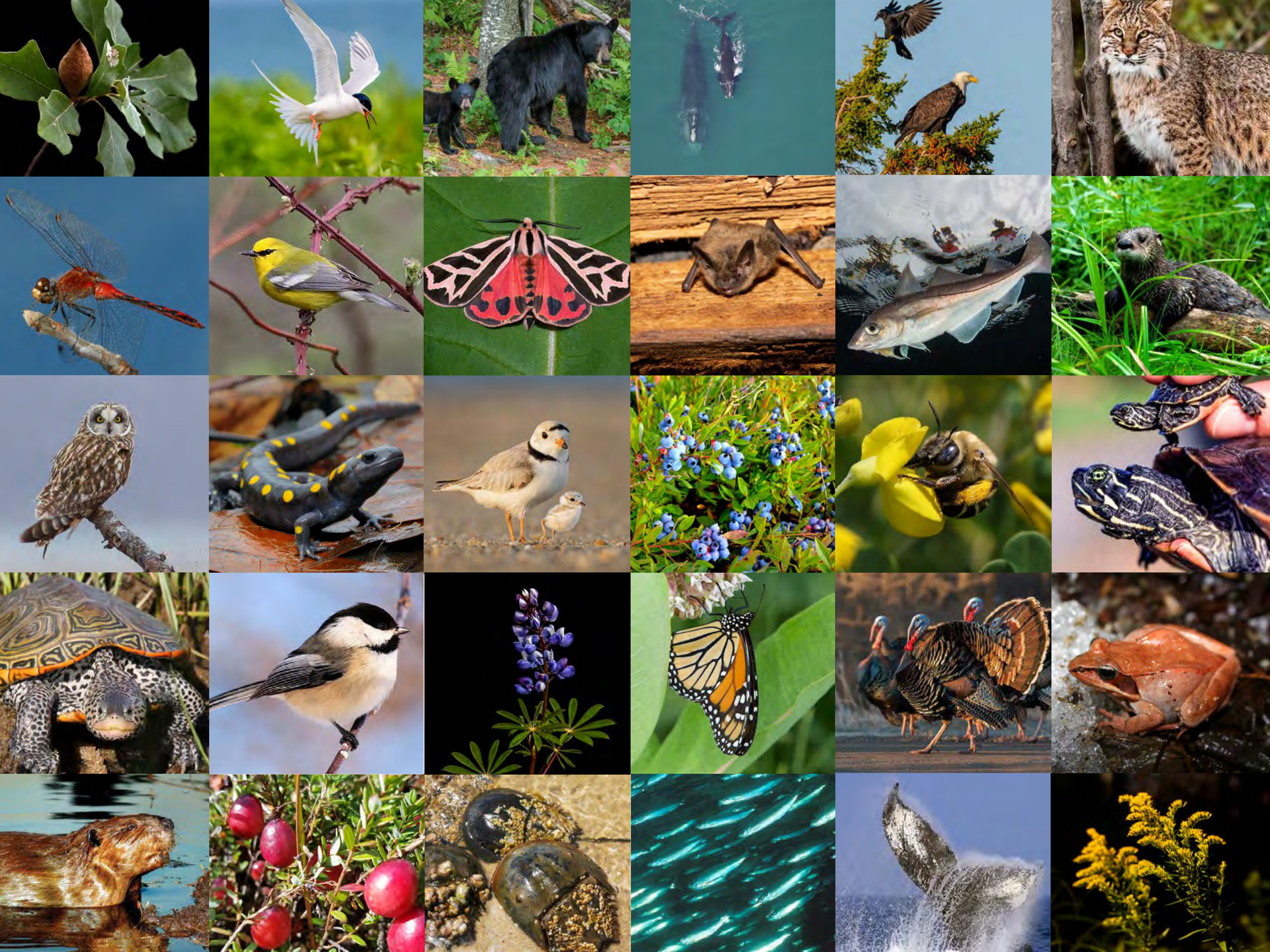
BIODIVERSITY CONSERVATION GOALS FOR THE COMMONWEALTH

A whole-of-government approach to conserve biodiversity in Massachusetts for 2030, 2040, and 2050

Commonwealth of Massachusetts

Department of Fish & Game



Biodiversity Conservation Goals for the Commonwealth

Pursuant to Executive Order No. 618: Biodiversity Conservation in Massachusetts

Published on August 21, 2025

"As we work to heal the earth, the earth heals us."

— Robin Wall Kimmerer

Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants

"There can be no purpose more inspiring than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us."

— E.O. Wilson

Half-Earth: Our Planet's Fight for Life

ACKNOWLEDGEMENTS

Thank you to the Healey-Driscoll Administration for launching this initiative. Special thanks to Executive Office of Energy & Environmental Affairs (EEA) Secretary Rebecca Tepper and Climate Chief Melissa Hoffer for their support. Thank you to staff from across Secretariats for input and collaboration, including EEA and its agencies. Thank you to the Department of Fish & Game staff. Above all, thank you to all the individuals and organizations who played a role in developing these goals.
A full summary of engagement, input, and all contributors can be found at **mass.gov/biodiversity**.

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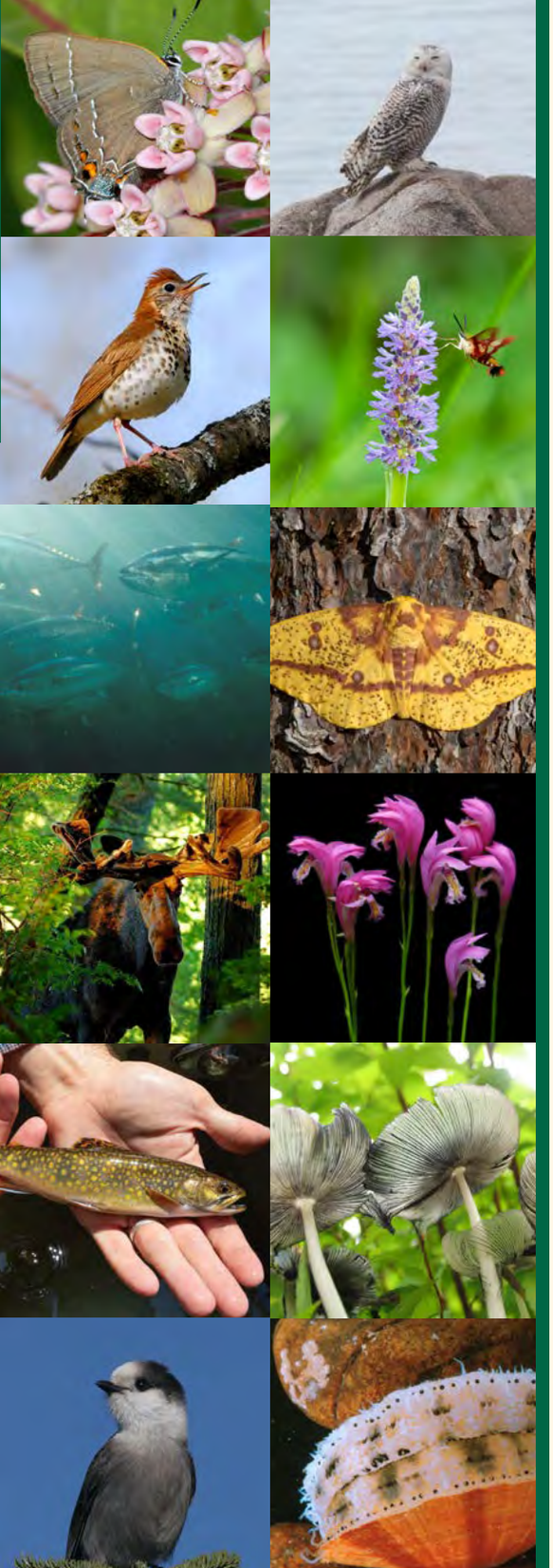
EXPLORE THE FULL GOALS & STRATEGIES:
Visit **mass.gov/biodiversity** to see the full matrix of goals and strategies and appendices that support this plan.

By 2050, Massachusetts can halt and reverse biodiversity loss and restore healthy, resilient ecosystems for future generations.



CALL TO ACTION

With Executive Order No. 618, Governor Maura Healey made history by calling for Massachusetts to be the first state in the country to set biodiversity conservation goals for 2030, 2040, and 2050.

To meet this charge, the Massachusetts Department of Fish & Game, alongside many partners, developed this ambitious 25-year plan to place biodiversity at the center of our climate and environmental agenda and invest in nature to sustain our health and well-being, food security, economy, and way of life.

Biodiversity—the variety and abundance of life—is declining at an unprecedented rate. It's happening everywhere—our oceans, forests and farms, wetlands and beaches, neighborhoods and backyards—but it goes largely unnoticed. It's a quiet crisis. In just one generation, we've lost over 3 billion birds in North America[1], seen the decline of iconic species like Atlantic cod, and rarely see fireflies in our backyards in summer.

Now is the time for action—through this initiative, Massachusetts can achieve a nature-positive future where we halt and reverse the decline of species and restore nature for the benefit of all. Building on enthusiasm and support from over 2,000 individuals and organizations, we propose four goals to conserve biodiversity for 2050:

- **PROTECT**—Double the pace of land protection to conserve 40% of our state by 2050, strategically focusing on 425,000 acres that are most important for species. Support designation of Cashes Ledge National Marine Sanctuary, a vital habitat for marine life.
- **RESTORE**—Accelerate the pace of restoration to bring over 75% of the most important habitats for species back to health, remove at least 10% of dams and upgrade 2,500+ culverts for fish and wildlife passage, and restore degraded salt marshes and marine habitats.
- **SUSTAIN**—Value ecosystem services of biodiversity through innovative and dedicated funding mechanisms, support biodiversity-friendly farms and local food systems, enhance the resilience of fisheries, and boost food security with wild foods.
- **CONNECT**—Launch a Local Biodiversity Grant Program to fund community-led efforts to conserve nature in every neighborhood. Provide a pathway for all students to learn about biodiversity and grow the conservation and restoration workforce to carry out these goals.

We all have a role to play—this will take all of us, together. Through the Massachusetts Biodiversity Partnership, the Healey-Driscoll Administration will bring a broad coalition of partners, municipalities, and Tribes together to champion local action and position Massachusetts as a national and global leader on tackling the biodiversity crisis. Now, more than ever, future generations depend on our leadership so we can preserve our natural heritage and ensure that the Commonwealth remains a shining beacon of hope in uncertain times.

Commissioner Thomas K. O'Shea
Massachusetts Department of Fish & Game

[1] Rosenberg, K. V., Dokter, A. M., Blancher, P. J., Sauer, J. R., Smith, A. C., Smith, P. A., Stanton, J. C., Panjabi, A., Helft, L., Parr, M., & Marra, P. P. (2019). Decline of the North American avifauna. *Science,* 366 (6461), 120–124.

BIODIVERISTY IN MASSACHUSETTS

Massachusetts is home to an extraordinary abundance and variety of life.

From the black bear to the bobcat to the bumblebee. Red-tailed hawk, hermit thrush, and black-capped chickadee. Hemlock, maple, cedar, and oak. Fantastic fungi, beetles, moths, and mycorrhizae. Box turtle, beaver, river otter, and spotted salamander. Asters, goldenrod, milkweed, and monarch butterfly. Horseshoe crab, tern, osprey, piping plover. Oyster, quahog, blue mussel, and barnacle. North Atlantic right whale, white shark, sturgeon, striped bass, and herring.

This is biodiversity—all the species, habitats, and complex interactions that make up the astonishing web of life. Thousands of plants, mammals, birds, bees, fish, fungi, insects, and other organisms call Massachusetts home. Whether common or rare, all evolved over millennia and have inherent, intrinsic value.

With over 3 million acres of forest, 8,000 miles of rivers, 1,500 miles of coastline, 2,500 square miles of state ocean waters, and 45,000 acres of salt marsh, our state is defined by its unique biodiversity.

Massachusetts is the "Bay State" with a rich maritime heritage anchored in our barrier beaches, rocky cliffs, and working waterfronts. Our state is home to the first conservation organizations and the first public park, Boston Common. We are the 11th most forested state in the country and are a major stop on the Atlantic Flyway. Parts of our state are globally rare biodiversity hotspots—such as the pine barrens of Southeastern Massachusetts and the Appalachian Mountain Corridor in the Berkshires. Some are home to rare and imperiled species—including migratory birds like the roseate tern and piping plover that nest on our shores.

Biodiversity isn't just found in distant, wild places—it's all around us, even right in our backyards.

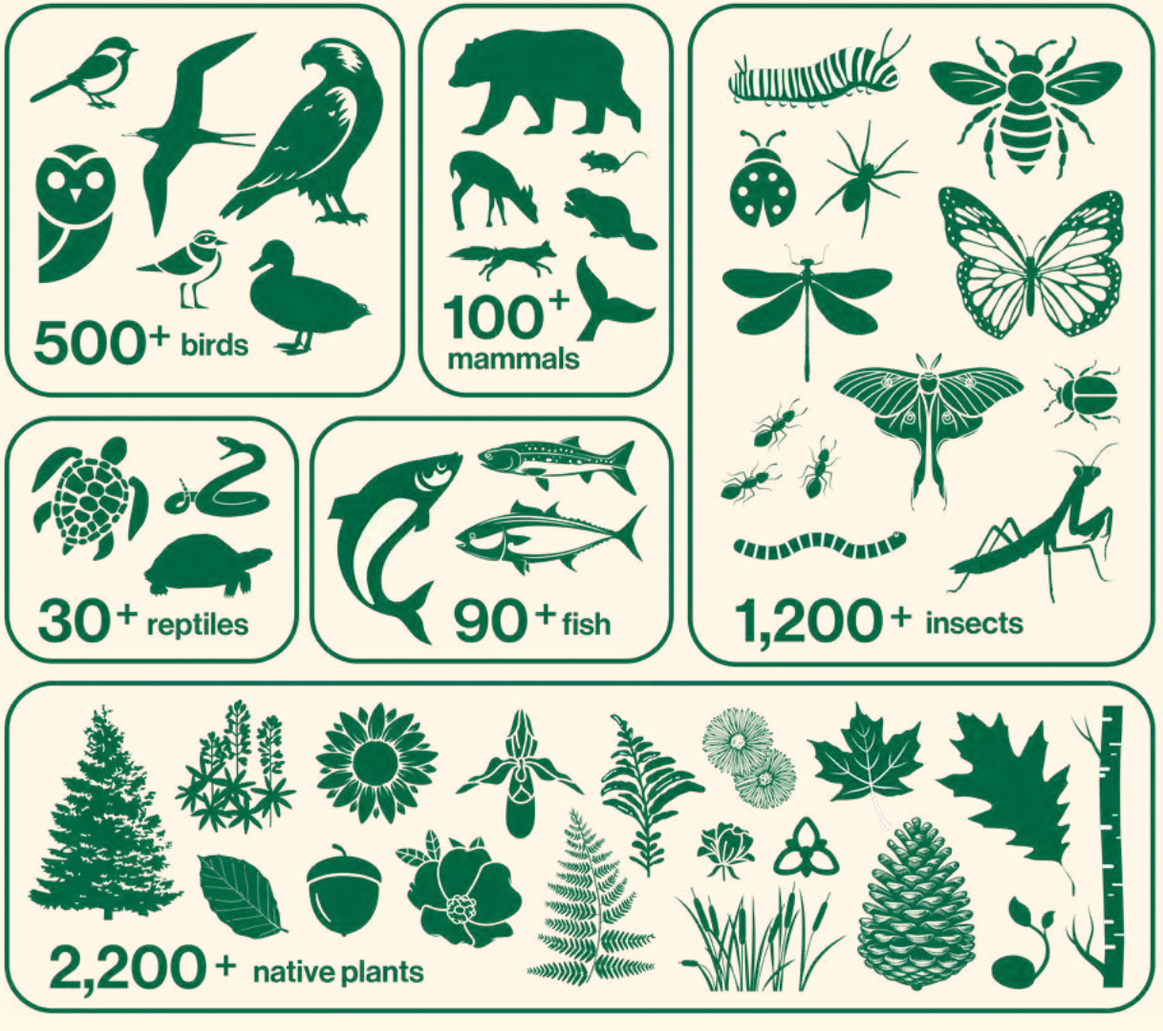
Each and every species, no matter how big or small, common or rare, has an important role to play in the ecosystem. Even familiar species you might see in your neighborhood, like the black-capped chickadee, matter. And we, too, are part of this extraordinary web of life.

Our Irreplaceable Natural Heritage

All species exist in interdependent relationships—if any one species is lost, it has a ripple effect on the whole ecosystem.

HOW MANY SPECIES CALL MASSACHUSETTS HOME?

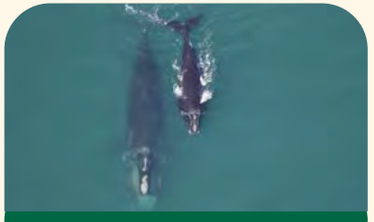
Our state is home to thousands of plants, mammals, birds, bees, fish, fungi, insects, and other organisms.

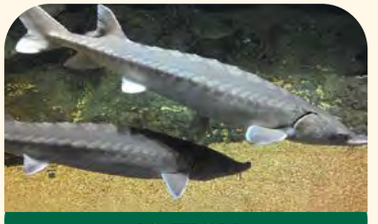


HOW MANY SPECIES ARE ENDANGERED?

Over 450 species are protected by the Massachusetts Endangered Species Act (MESA) and listed as endangered, threatened, or special concern. Hundreds more are at risk.


30 BIRDS


17 MAMMALS

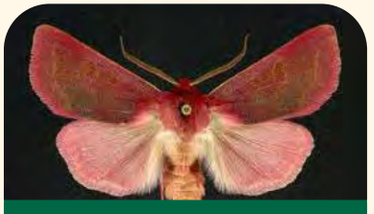

10 FISH


4 AMPHIBIANS


273 PLANTS


16 REPTILES


18 DRAGONFLIES & DAMSELFLIES


46 BUTTERFLIES & MOTHS

WHY IS BIODIVERSITY IMPORTANT TO YOU?

We asked over 200 Massachusetts residents this one simple question. Here's what they said:

"It is irreplaceable."
—Sturbridge, MA

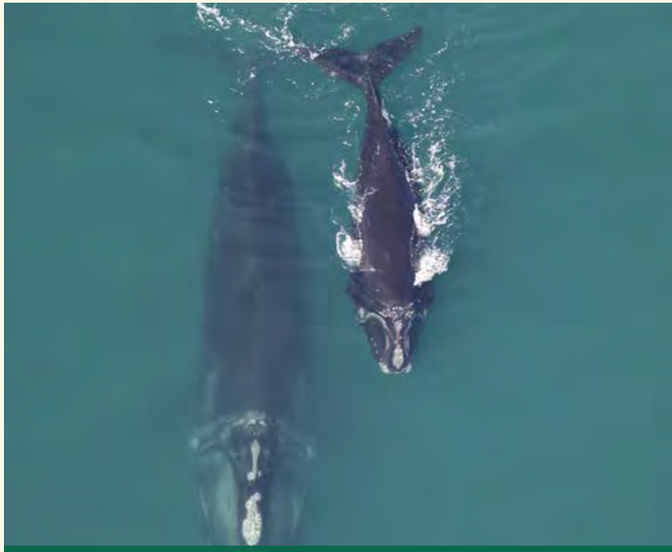
"The infinite beauty, complexity, and ingenuity of life amazes me."
—Winchester, MA

"As a member of the younger generation, a healthier, more resilient world is a huge priority. I don't want to see iconic species disappear in my lifetime."
—Swansea, MA

"We are part of nature and dependent on it."
—Arlington, MA

"Biodiversity is life."
—Chelsea, MA

"Nature is a great healer."
—Stockbridge, MA



"Through healing and restoring ecosystems, we heal ourselves."
—Cambridge, MA

"All living things are connected to each other in an intricate web."

—Harvard, MA

"All life has a purpose no matter how ugly or small. We are interconnected with nature, and it should be our goal to protect our fellow inhabitants."

—Mansfield, MA

"Preserving biodiversity is one of the major natural solutions to climate change."

—Brewster, MA

"I love and appreciate nature. It keeps me happy and grounded."

—Springfield, MA

"I want future generations to be able to enjoy the rich natural experience that I have held close to my heart all my life."

—Shelburne, MA

"For all the families who live here and love it here, and for all the flora and fauna who cannot convey their wishes, we all deserve clean air and soil, fresh water, and a beautiful place to call home. Biodiversity is important for quality of life in Massachusetts, not only for ourselves but for future generations."

—Malden, MA

Biodiversity is the foundation for life—it anchors our history, heritage, and culture, supports our health, well-being, food security, and economy, and enriches our lives.

Nature provides clean air and water, food and medicine, and benefits for mental and physical health. Healthy ecosystems support our farms, fisheries, and local food systems. Our unique biodiversity plays an important role in tourism, drives our economy, and makes Massachusetts one of the best places in the country to visit and raise a family.

NATURE-BASED SOLUTIONS We can work with nature to build climate resilience. By restoring our salt marshes, we can protect our coastal communities from storms, enhance carbon sequestration, and improve habitat for climate-vulnerable species like the saltmarsh sparrow.

Biodiversity is a key climate solution.

By protecting and restoring nature, we build resilience to flooding, drought, rising seas, and extreme heat. Healthy, biodiverse ecosystems also store and sequester more carbon—conservation and restoration will help Massachusetts achieve our ambitious net-zero emissions goals for 2050.

Restoring nature's resilience is cost-effective, impactful, and a win-win for people and wildlife.

For every $1 spent on nature-based solutions, over $7 is saved on disaster recovery.[2] In the Recommendations of the Climate Chief for a whole-of-government approach to the climate crisis, bold biodiversity conservation goals are called out as a leading strategy for preparing our communities for climate change.[3]

[2] Reguero, B. G., Beck, M. W., Bresch, D. N., Calil, J., & Meliane, I. (2018). Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States. *PLoS ONE*, 13(4), e0192132. [3] Commonwealth of Massachusetts. (2023). Recommendations of the Climate Chief.

The Value of Biodiversity

Our state's rich biodiversity plays a vital role in our economy and makes Massachusetts an attractive place to live, work, and visit.

HEALTHY COMMUNITIES

FOR EVERY $1 SPENT ON WATER RESOURCE PROTECTION:

$27 SAVED
ON WATER TREATMENT [4]

URBAN FORESTS REMOVE
1.75 MILLION
POUNDS OF AIR POLLUTION ANNUALLY IN BOSTON [5]

CLIMATE RESILIENCE & CARBON SEQUESTRATION

COASTAL WETLANDS SAVED COMMUNITIES
$625 MILLION
IN DAMAGES DURING HURRICANE SANDY IN 2012 [6]

1M GALLONS
of floodwaters can be stored in just one acre of wetlands [7]

20% DECREASE
in flood risks downstream of forested floodplains [8]

75% return on investment for every $1M spent on projects to restore wetlands and waterways [9]

SALT MARSHES CAN STORE
OVER 10X
THE CARBON OF FORESTS ON A PER-ACRE BASIS [10]

FORESTS ABSORB
OVER 7%
OF OUR STATE'S ANNUAL CARBON EMISSIONS [11]

OUTDOOR RECREATION & TOURISM

Massachusetts has the fastest-growing outdoor recreation economy in the nation.

IN 2023 ALONE, OUTDOOR RECREATION ECONOMY GENERATED OVER
$13.2 BILLION
AND CREATED 103,000 JOBS [12]

FARMS & FOOD SECURITY

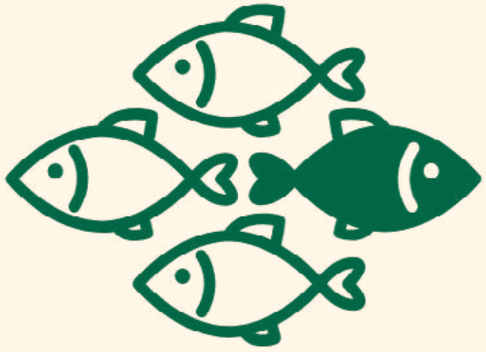
POLLINATORS CONTRIBUTE
$34 BILLION
TO THE U.S. ECONOMY ANNUALLY [13]

45% of Massachusetts agricultural products rely on a rich diversity of pollinators [14]

IN 2022, 7,000 FARMS SOLD
$607 MILLION
MASSACHUSETTS-GROWN AGRICULTURAL PRODUCTS [15]

HUNTERS SHARE THE HARVEST:
50,000 MEALS
TO PEOPLE EXPERIENCING FOOD INSECURITY SINCE 2022 [16]

SUSTAINABLE FISHERIES



MASSACHUSETTS' NATION-LEADING BLUE ECONOMY GENERATED
$8.3 BILLION
AND CREATED 87,000 JOBS IN 2021 [17]

$687 MILLION
EX-VESSEL VALUE OF SEAFOOD LANDED IN MASSACHUSETTS IN 2022 [18]

[4] Winiecki, E. (2012). Economics and Source Water Protection. Presentation. U.S. EPA. [5] Hong-Hanh, C., et al. (2018). Global Warming Solutions Act: 10-Year Progress Report. Commonwealth of Massachusetts. 77 pp. [6] Narayan, S., et al. (2017). "The value of coastal wetlands for flood damage reduction in the Northeastern USA." Scientific Reports. 7(1):9643. [7] EPA. (2006). Wetlands: Protecting Life and Property from Flooding. 4 pp. [8] Dixon, S.J. et al. (2016). "The effects of river restoration on catchment scale flood risk and flood hydrology." Earth Surface Processes and Landforms. 41(7), pp. 997-1008. [9] Massachusetts Division of Ecological Restoration. (2014). Estimates of Ecosystem Service Values from Ecological Restoration Projects in Massachusetts. 33 pp 10 [11] Mcleod, E. et al. (2011). A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO2. Frontiers in Ecology and the Environment, 9(10), 552–560. [11] Ricci, E.H. et al.. 2020. Losing Ground: Nature's Value in a Changing Climate. Massachusetts Audubon Society, Inc. 33 pp. [12] U.S. Bureau of Economic Analysis. (2024). Outdoor Recreation Satellite Account, U.S. and States, 2023. [13] National Science Foundation. (2022). Economic value of insect pollination services in U.S. much higher than thought, study finds. [14] Massachusetts Department of Agricultural Resources. (2017). Massachusetts Pollinator Protection Plan. [15] United States Department of Agriculture, Vilsack, T., & Hamer, H. (2024). Massachusetts state and county data. In Volume 1 • Geographic Area Series • Part 21. [16] Massachusetts Division of Fisheries and Wildlife. (2023) Hunters Share the Harvest. [17] NOAA Office for Coastal Zone Management (2024). 2024 Marine Economy Report. [18] Massachusetts Division of Marine Fisheries. (2023). 2022 Annual Report.

Biodiversity underpins every aspect of life on our planet—but it's declining at an unprecedented rate.

Despite its critical value, biodiversity is in crisis, both globally and right here in Massachusetts. Scientists estimate over one million species will go extinct in the 21st century—a rate ten times higher than anything we've seen in Earth's history.[19]

HABITAT FRAGMENTATION Massachusetts has over 3,000 dams. Over 200 pose serious public safety risks if they were to fail during extreme weather. Dams degrade river health and block passage for migratory fish species like river herring, which are ecologically and culturally significant.

Over 450 species are currently listed by the Massachusetts Endangered Species Act (MESA), and hundreds more are at risk.[20] It's not just rare species that are threatened—common and familiar species we know and love are in danger.

This crisis is driven by many factors—habitat loss, pollution of our lands and waters, poorly-planned development, and invasive species threaten our wildlife and way of life. Massachusetts has lost over one-third of historic wetlands[21], over 50% of eelgrass in our estuaries since 1990s[22], and sees over 4,000 acres of net forest loss each year.[23] Dams, undersized road culverts, and excess pavement interrupt fish and wildlife migration and increase flood risks. Pollution from stormwater runoff and sewage overflows threatens public health and our economy. Light pollution in our backyards and cities disorients and disrupts insects, migratory birds, and nocturnal wildlife. Invasive species overtake our forests, fields, lakes, and ponds. And, stark disparities exist in access to nature—underserved and Environmental Justice (EJ) populations lack essential green spaces that protect public health and provide refuge for wildlife in urban areas.

[19] IPBES Secretariat. (2019). Global Assessment Report on Biodiversity and Ecosystem Services [20] Commonwealth of Massachusetts. (2024). Massachusetts Endangered Species Act List of Endangered, Threatened, and Special Concern species. [21] Massachusetts Department of Environmental Protection. (2025). Wetlands Protection Program. [22] Massachusetts Department of Environmental Protection (2024). Eelgrass Mapping Project. [23] USDA Forest Service. (2020). Forests of Massachusetts, 2019 Update.

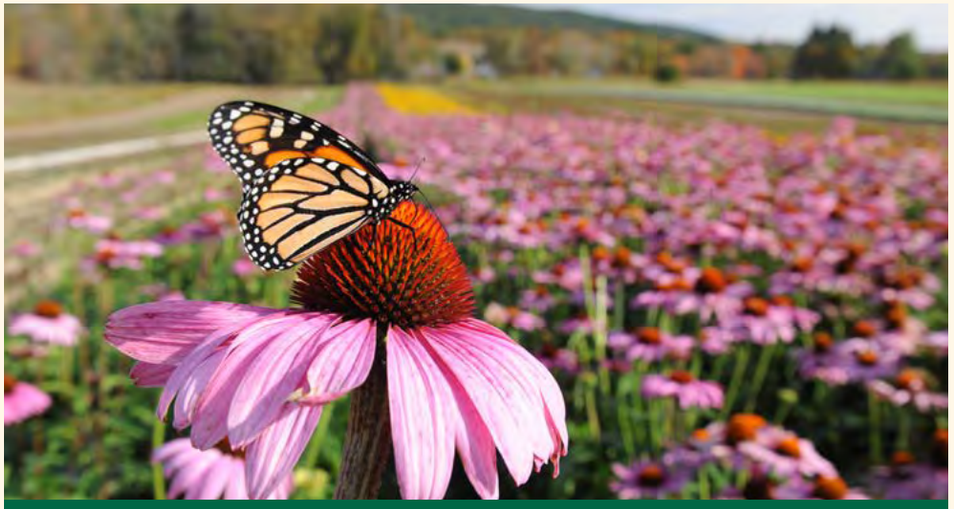
Climate change is accelerating impacts, threatening our wildlife and way of life.

Temperatures in Massachusetts have increased by 3.5°F since the beginning of the 20th century.[24] By 2070, Boston could see 46 days over 90°F each year.[25]

Massachusetts is already seeing impacts—increased precipitation, flooding, drought, sea-level rise, and extreme heat are having profound effects on nature and people. The Gulf of Maine is one of the fastest warming bodies of water on Earth[26]—hotter temperatures and ocean acidification threaten iconic species like lobster, softshell clams, and cod.[27] Sea-level rise threatens our beaches, estuaries, and salt marshes, which provide critical habitat for migratory birds and marine life, carbon storage, outdoor recreation opportunities, and protection from storms.

Precipitation during heavy rain events has increased by 55% between 1958 and 2016 in the northeastern United States.[28] More intense storms mean more stormwater pollution and sewer overflows, coastal erosion, infrastructure damage, increased public safety risks, and economic losses.[29] At the same time, extreme heat and droughts are becoming more frequent, long-lasting, and severe.[29] In 2016, our state experienced the most significant drought since the 1960s with record low surface and groundwater levels, and again in 2020, 2022, and 2024.[30] This has devastating impacts on fish and wildlife, public health and safety, drinking water supply, food security, and wildfire risks.

Some communities are far more vulnerable. Neighborhoods with less tree canopy, more pavement, and little green space see more intense impacts from climate change, unjust exposure to pollution, and poorer physical and mental health outcomes.[31]



HABITAT LOSS & CLIMATE CHANGE Since the 1990s, 80% of the overwintering Eastern monarch butterfly populations have declined due to habitat loss and climate change. In December 2024, U.S. Fish & Wildlife Service proposed listing the once common monarch butterfly on the federal endangered species list.[32]

Our climate is changing faster than species can adapt. Without intervention, we will continue to see species decline.

Small shifts have big impacts—rapidly warming temperatures, changing seasons, and unpredictable weather disrupt ecosystems.

In Massachusetts, we are seeing earlier springs and later winters, disrupting entire lifecycles and food webs. This is especially devastating for migratory birds, whose arrival may no longer sync with the emergence of the plants, insects, and seeds they rely on for food. Warming temperatures are causing some species to seek cooler habitats northward, like American lobster and the blackpoll warbler, and we are seeing southern species move northward to Massachusetts, like black sea bass, Carolina wrens, and red-bellied woodpeckers. In our rivers and streams, warmer temperatures mean coldwater fish species like Eastern brook trout struggle to survive. On our coasts, sea-level rise and erosion are impacting nesting and breeding habitat for many, including the piping plover, diamondback terrapin, and horseshoe crab.

[24] NOAA National Centers for Environmental Information. (2025). Monthly National Climate Report for 2024. [25] City of Boston. (2022). Climate Ready Boston Heat Resilience Plan. [26] Seidov, Dan, A. Mishonov, and R. Parsons, "Recent warming and decadal variability of Gulf of Maine and Slope Water," Limnology and Oceanography, doi:10.1002/lno.1189 [27] Anderson, B., Grabowski, J., Knisel, J., Scyphers, S. B., Maguire, T. J., Krumholz, J., Kirshen, P., Douglas, E., & University of Massachusetts Boston. (2024). Climate change impacts on the marine environment in the Greater Boston area. [28] U.S. Global Change Research Program. (2017). Climate Science Special Report: Fourth National Climate Assessment, Volume I [29] Commonwealth of Massachusetts. (2022). Massachusetts climate change assessment. [30] Massachusetts Drought Management Task Force. (2025). Drought Status History 2001-2024. [31] Massachusetts Executive Office of Energy & Environmental Affairs. (2024). Environmental Justice Strategy: Executive Office of Energy and Environmental Affairs Secretariat and agency strategies for proactively promoting environmental justice in the Commonwealth of Massachusetts. [32] U. S. Department of Interior Fish and Wildlife Service. (2024). Endangered and threatened wildlife and plants; threatened species status with Section 4(d) rule for Monarch Butterfly and designation of critical habitat [Proposed Rules]. Federal Register, Vol. 89, No. 239.

There is hope and we can make a difference—Massachusetts will lead the way.

In 2023, Governor Maura Healey signed Executive Order No. 618, which names the intertwined crises of biodiversity loss and climate change as existential threats to the Commonwealth and directs the Department of Fish & Game to develop biodiversity conservation goals for 2030, 2040, and 2050.[33]

EXECUTIVE ORDER NO. 618: BIODIVERSITY CONSERVATION IN MASSACHUSETTS

1. **REVIEW** all existing efforts.
2. **RECOMMEND** biodiversity conservation goals for 2030, 2040, and 2050, and strategies to meet those goals, including for coastal and marine biodiversity, to halt and reverse the loss of the full variety of species and habitats.
3. **DELIVER** recommendations to the Healey-Driscoll Administration.

A global movement, at a Massachusetts scale.

Over 190 nations have established commitments through the Kunming-Montreal Global Biodiversity Framework.[34]

Inspired in part by noted Massachusetts biologist E.O. Wilson's "Half Earth: Our Planet's Fight for Life"[35], these nations pledge to conserve 30% of lands and waters to halt and reverse the loss of species by 2030 and achieve harmony with nature by 2050. This initiative affirms Massachusetts' commitment to this global movement and aligns with a growing Indigenous-led Rights of Nature movement, both internationally and right here with the Mashpee Wampanoag Tribe youth "Declaration of the Rights of Herring".[36]

At the same time, Massachusetts is the third-most densely populated state in the nation with an urgent need for affordable housing, an accelerated transition to clean energy, and many critical infrastructure upgrades. This initiative provides tools to inform the Healey-Driscoll Administration's commitments to advance clean energy and climate resilience, environmental justice, housing and transportation, respectful relationships with Indigenous peoples and Tribes, and ensures our state remains one of the best places in the country to live, work, and raise a family.

[33] Commonwealth of Massachusetts. (2023) Executive Order No. 618: Biodiversity Conservation in Massachusetts [34] Convention on Biological Diversity (2022) Kunming-Montreal Global Biodiversity Framework. [35] Wilson, Edward O. 2016. Half-earth: Our Planet's Fight for Life. Liveright Publishing Corporation, a division of W.W. Norton & Company. [36] Mashpee Wampanoag Tribe. (2023). Mashpee Wampanoag Tribe Declaration of the Rights of Herring

Developing nation-leading biodiversity conservation goals for Massachusetts.

Over the past year, the Department of Fish & Game comprehensively reviewed existing global, national, and state efforts and embraced diverse public input to develop the following recommendations for 2030, 2040, and 2050. Throughout this review, one thing is clear—more can be done to conserve our state's irreplaceable biodiversity.

REVIEW OF EXISTING EFFORTS

Massachusetts has made significant strides to conserve biodiversity—over 28% of our state is permanently protected[37], compared to just 13% nationally.[38] We enjoy some of the strongest environmental laws in the country, like the Massachusetts Endangered Species Act (MESA) and Wetlands Protection Act, as well as successful efforts to restore species. With this strong legacy of leadership, the Commonwealth has achieved major successes that serve as a beacon of hope for the future, like the remarkable comeback of the bald eagle, wild turkey, and piping plover.

Through interviews with each Secretariat, an all-day workshop with 75+ staff from the Executive Office of Environmental Affairs (EEA) and its agencies, and one-on-one meetings with key state leaders, we developed the following recommendations for a whole-of-government approach to biodiversity conservation to grow existing efforts and form new innovative partnerships. Examples include working with MassDOT to improve wildlife crossings and infrastructure resilience, increasing access to outdoors and career opportunities for veterans and people with disabilities, creating biodiversity design standards and best management practices for state-owned properties, and integrating biodiversity criteria into relevant existing state grants.

BUILD ON & COMPLEMENT EXISTING STATE PLANS & POLICIES:

Massachusetts Clean Energy & Climate Plan, Resilient Lands Initiative, ResilientMass, BioMap, State Wildlife Action Plan, Farmland Action Plan, Healthy Soils Initiative, Ocean Management Plan, Forests as Climate Solutions, Resilient Coasts, Environmental Justice Strategy

BIODIVERSITY WORKSHOP All-day workshop to develop goals with 40+ partners from conservation, climate, academic, commercial fishing, and hunting organizations in February 2024.

PUBLIC ENGAGEMENT

Throughout, the Department embraced diverse public input and saw tremendous enthusiasm and support for this initiative, evidenced by over 2,000 people engaged and perspectives directly incorporated from over 250 individuals and organizations who gave public comments.

Several common themes emerged: better coordination across the whole-of-government, nature's value in a changing climate, the need for significant investment in land protection and restoration for biodiversity and climate resilience, addressing pollution, pesticides, invasive species, and plastics, permitting and regulatory reform, supporting municipalities and community-led efforts, and robust public education to engage all people in the care and stewardship of biodiversity.

PUBLIC ENGAGEMENT: BY THE NUMBERS

PRESENTATIONS

- 30+ public presentations to councils, commissions, conferences, organizations
- Keynote for 2025 30x30 Partnership Summit and 2024 Northeast Association of Fish & Wildlife Agencies (NEAFWA) conference

PUBLIC COMMENTS

- 2 listening sessions
- 318 attendees
- 60 verbal comments
- 200+ written comments from individuals and organizations
- Biodiversity Workshop with 40+ organizations

[37] Commonwealth of Massachusetts. (2025). 2024 Massachusetts Climate Report Card: Natural and Working Lands. [38] U.S Geological Survey Protected Areas Database of the United States.

REBUILDING BIODIVERSITY IN MASSACHUSETTS

The Department of Fish & Game recommends the following Biodiversity Conservation Goals for 2030, 2040, and 2050, coupled with strategic innovations and policies to achieve these goals.

A nature positive future—where all life thrives.

This is a critical moment for action—Massachusetts must boldly pursue solutions with urgency to halt and reverse the loss of biodiversity. This ambitious plan charts a path forward, with investment and collaboration, to rebuild biodiversity in Massachusetts.

By 2050, we will work towards the recovery of endangered species and prevent future loss. We will protect large, connected, resilient landscapes to ensure species can adapt during a time of rapid change. We will restore free-flowing rivers, welcome back migratory fish, and build resilience to flooding. We will preserve salt marshes and wetlands for imperiled species and enhance their ability to protect our communities from extreme storms. We will sustain our nation-leading blue economy and seafood industry by restoring critical marine habitats, stemming the tide of pollution, and discovering the wonder of our ocean. We will bolster food security by supporting pollinators, farmers, and wild foods. We will bring nature to every neighborhood—investing in community-led efforts to bring pollinator pathways, community gardens, green infrastructure, food forests, and robust tree canopy to all. And, we will educate and inspire the next generation to care for the world around them and ensure all have the opportunity to feel a sense of appreciation, belonging, and connection to nature.

From the global to the regional to the local—action at all scales will be necessary. From critically endangered species like the North Atlantic right whale to common species like backyard birds, bees, and butterflies that are in decline, every species matters to the interdependent web of life. Through efforts across scales, we can give each and every one the best chance to thrive.

BIODIVERSITY CONSERVATION AT ALL SCALES:

GLOBALLY RARE BIODIVERSITY HOTSPOTS
Barrens buckmoth, Southeastern Massachusetts pine barrens

LANDSCAPE & WATERSHED SCALE
River herring, coastal watersheds

KEY HABITAT FOR RARE & IMPERILED SPECIES
Blue-spotted salamander, vernal pools

LOCAL BIODIVERSITY & COMMON SPECIES
Monarch butterfly, urban pollinator garden

BIODIVERSITY CONSERVATION GOALS FOR 2050

1

PROTECT

MOST IMPORTANT HABITATS FOR SPECIES & CLIMATE RESILIENCE

- **Double the pace of land protection** to conserve 40% by 2050
- Strategically **protect 425,000+ acres** of most important habitats
- Support consideration of **Cashes Ledge National Marine Sanctuary**
- Protect people and wildlife from **pesticides, pollution, and plastics**
- **Support community-led efforts** to protect local biodiversity

2

RESTORE

MOST IMPORTANT HABITATS FOR SPECIES & CLIMATE RESILIENCE

- Accelerate the pace of restoration to **restore 75% of most important habitats**
- **Remove over 10% of 3,000 dams,** restore fish passage in every coastal watershed
- **Upgrade 2,500+ culverts** for biodiversity and climate resilience
- Map and restore **essential marine habitats** to boost biodiversity
- **Support community-led efforts** to restore local biodiversity

3

SUSTAIN

HUMAN HEALTH, FOOD SECURITY, & ECONOMY

- **Increase food security with** wild foods, access to hunting, fishing, foraging
- **Support biodiversity on farms,** ensure no net loss of farmland, build community gardens in urban areas
- **Boost our blue economy** with no net loss of shellfish beds, marine habitat restoration, and invest in working waterfronts
- **Value ecosystem services** of biodiversity through innovative and dedicated funding mechanisms

4

CONNECT

ALL PEOPLE WITH NATURE

- **Nature in the Neighborhoods:** Launch local biodiversity grants program to support community-led efforts, develop municipal biodiversity toolkit
- **Nature in the Schools:** Develop biodiversity-focused curriculum for K–12, after school, and summer programs
- **Nature for All:** Launch public education campaign and invest in access to nature for all
- **Nature at Work:** Invest in workforce development for careers in biodiversity

BIODIVERSITY CONSERVATION GOAL #1
PROTECT

Massachusetts is losing nature at an alarming rate—habitat loss and degradation are the biggest threats to biodiversity.

Massachusetts is the third-most densely populated state in the country. While we have made significant strides, with over 28% of our 5.2 million acre state permanently protected from development today, over 1.5 million acres of key habitats[39] for biodiversity remain unprotected at a time when species and people need them the most.

GOAL #1—PROTECT

MOST IMPORTANT HABITATS FOR SPECIES & CLIMATE RESILIENCE

Permanently secure from future harm, including development or conversion to other uses, pollution, unsustainable harvest, and climate impacts. In the marine environment, protection includes preservation of traditional uses like sustainable fishing.

BIODIVERSITY HOTSPOTS Some habitats, like coastal plain ponds of Southeastern Massachusetts, are critical for rare or endangered species, like the delicate Plymouth gentian flower, dragonflies, damselflies, and migratory birds.

HABITAT LOSS: BY THE NUMBERS

4,000 acres of net forest loss each year [40]

1/3 of wetlands lost since colonial times [41]

50% of eelgrass lost since 1990s [42]

90% of high salt marsh threatened by 2070 [43]

60,000 acres of farmland lost from 1997-2017 [44]

[39] Massachusetts Division of Fisheries and Wildlife, The Nature Conservancy in Massachusetts. (2022). BioMap: The Future of Conservation in Massachusetts. [40] USDA Forest Service. (2020). Forests of Massachusetts, 2019 Update. [41] Massachusetts Department of Environmental Protection. (2025). Wetlands Protection Program. 42 Massachusetts Department of Environmental Protection (2024). Eelgrass Mapping Project. [43] Massachusetts Office of Coastal Zone Management. (2016). Sea Level Affecting Marshes Model. [44] Massachusetts Department of Agricultural Resources. (2023). Massachusetts Farmland Action Plan for 2023-2050.

DOUBLE THE PACE OF LAND PROTECTION

The Clean Energy and Climate Plan (CECP), the Commonwealth's comprehensive plan to achieve net zero greenhouse gas emissions, calls for our state to protect 40% of lands and waters, or 2 million acres, by 2050.[45] To achieve this, our state must double the pace of land protection through investment and partnership and focus efforts on most important habitats for biodiversity.

PROTECT 1.5M ACRES OF KEY HABITAT BY 2050

BioMap, a core tool for strategic protection of lands and waters, identifies 2.4 million acres that are most important for biodiversity, over 1 million of which are already protected.[46] As the Commonwealth works to conserve 40% by 2050, focus efforts on remaining unprotected key habitats. By 2050, protect an additional 425,000 acres of remaining unprotected key habitats to halt and reverse species loss and build climate resilience.

PROTECT KEY WILDLIFE MIGRATION CORRIDORS

Take a landscape-scale and watershed-scale approach to knit together disconnected habitats and help species keep pace with climate change. Conserve "stepping-stone" corridors between large, intact habitats and create wildlife-friendly crossings to provide safe passage over key roadways. Promote salt marsh migration, remove barriers, and improve river and stream connectivity.

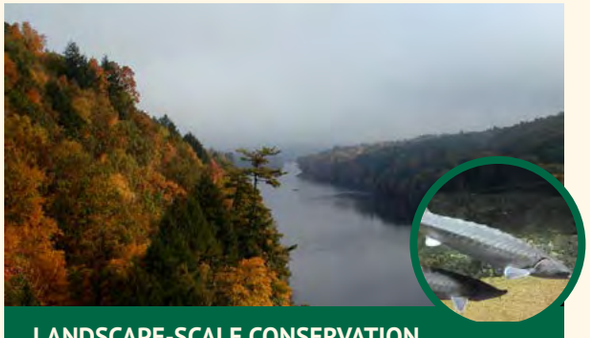
PROTECT LOCALLY-IMPORTANT BIODIVERSITY

Support non-profits, municipalities, Tribes, and Environmental Justice communities in identifying and protecting locally-important biodiversity through grants and technical assistance. Provide technical assistance on BioMap and conduct research and monitoring. Support creation of new pollinator gardens and pathways, food forests, and microhabitats in every community.

BIODIVERSITY INFORMS LAND USE PLANNING

Incorporate most important habitats for biodiversity in a long-term comprehensive land use plan for the Commonwealth. Include biodiversity in regional planning to inform renewable energy siting and related infrastructure laws, regulations, and specific project review.

BIOMAP guides protection of key habitats for biodiversity, identified through landscape-scale analyses of species distribution and abundance, rare species hot-spots, and intact habitats. For example, BioMap identifies Nashua River watershed wetlands as critical for threatened species like the Blanding's turtle.[47]



LANDSCAPE-SCALE CONSERVATION
Massachusetts received over $8M through the America the Beautiful Initiative to conserve and restore biodiversity in two globally significant biodiversity hotspots, the Appalachian Mountain corridor and the Southeastern Massachusetts pine barrens. In the Appalachian Mountain corridor, we will restore aquatic connectivity within three river basins and reconnect wildlife corridors from the southern Berkshires to the Connecticut River valley. This will enhance connections between two key tributaries and provide habitat for numerous imperiled species, including the dwarf wedge mussel and shortnose sturgeon.

[45] Massachusetts Executive Office of Energy and Environmental Affairs. (2022). Clean Energy and Climate Plan for 2025 and 2030. [46, 47] Massachusetts Division of Fisheries and Wildlife, The Nature Conservancy in Massachusetts. (2022). BioMap: The Future of Conservation in Massachusetts.

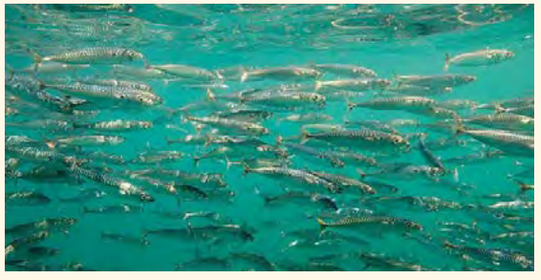
CONVENE MARINE BIODIVERSITY EXPERTS

Better coordination is needed to address marine biodiversity loss. Engage federal and state agencies, Tribes, commercial fishing, conservation, and academic partners to establish regulatory, voluntary, and cooperative approaches to rebuild marine ecosystems and sustain marine fisheries productivity amidst climate change.

PROTECT OCEAN FROM POLLUTION

One of the biggest threats to marine biodiversity is nutrient pollution from stormwater runoff and sewer and septic systems. Increase state investment in sewer separation, wastewater treatment, and green infrastructure in coastal watersheds to protect ecosystem health, public health, and the shellfish and aquaculture industry from economic losses.

IMPORTANT MARINE HABITATS Eelgrass provides vital nursery and foraging habitat for many species. Underwater meadows buffer our coasts from stronger storms and store blue carbon. In the 1930s, disease killed almost all eelgrass on the East Coast[50] and caused collapse of the bay scallop fishery.[51] Today, eelgrass is threatened by nutrient pollution, development, and climate change.



COMPREHENSIVELY MAP MARINE HABITATS & SET GOALS

Many essential habitats that are important for healthy fish populations are not comprehensively mapped. Through partnership with federal and state agencies, Tribes, commercial fishing, conservation, and academic experts, comprehensively map key coastal and marine habitats to inform the Ocean Management Plan[48], further our understanding of ocean life, and inform decisions around habitat protection. Set specific goals and identify tools for 2030, 2040, and 2050 with partners to better protect eelgrass, kelp and rockweed, complex hard bottom, naturally-occurring shellfish, and other unique or sensitive habitats.

THE WONDERS OF CASHES LEDGE Fishers, marine biologists, conservation organizations, and fisheries managers alike have long recognized the significance of Cashes Ledge in the Gulf of Maine. With unique upwelling and geography, the area has a dense kelp forest around Ammen Rock, an underwater mountain peak, inhabited by diverse and abundant marine life.

CASHES LEDGE NATIONAL MARINE SANCTUARY

In 2024, Cashes Ledge, a vital habitat for fish and marine mammals, was nominated for consideration[49] as a new National Marine Sanctuary. Under this designation, discharges, marine construction, or exploitation for oil, gas, or minerals would be prohibited. Access to traditional uses such as sustainable commercial fishing would be preserved, as is in nearby Stellwagen Bank National Marine Sanctuary.

Massachusetts should initiate a public process to explore this designation to preserve and protect this vital resource for future generations, enhance research and monitoring, and promote public education and appreciation of Cashes Ledge.

[48] Massachusetts Office of Coastal Zone Management. (2021). Ocean Management Plan. [49] NOAA Office of National Marine Sanctuaries. (2025) Notice of Cashes Ledge Site Added to the Inventory of Areas for Possible Designation as National Marine Sanctuaries. Federal Register Doc. 2024-30702 [50] Milne, L.J. and M.J. Milne. 1951. The eelgrass catastrophe. Scientific American. 184:52-55 [51] Carlton, J.T., et. al. 1991. The first historical extinction of a marine invertebrate in an ocean basin: the demise of the eelgrass limpet, Lottia alveus. Biological Bulletin 180:72-80

DRAMATICALLY REDUCE WATER POLLUTION

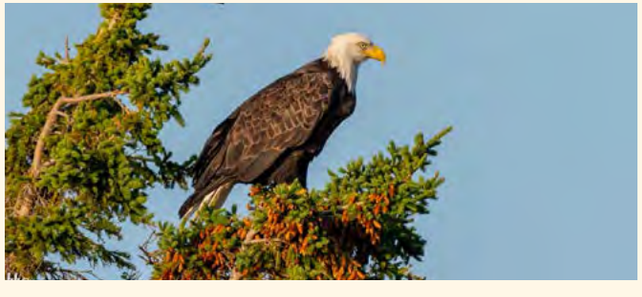
Significantly reduce or eliminate combined-sewer overflows (CSOs), sanitary sewer overflows (SSOs), stormwater runoff, and septic pollution through sewer separation, treatment plant upgrades, sewer expansion, aquatic habitat buffers, and green infrastructure to protect biodiversity, shellfish beds, and public health. Increase investment and technical assistance for curbing stormwater pollution to ensure waters are swimmable and fishable.

PROTECT WATER QUALITY & QUANTITY

Ensure that surface and groundwater resources are protected and sustainably managed to protect healthy, resilient ecosystems and safe drinking water supply. Ensure adequate streamflow for fish and wildlife. Require water conservation measures during droughts, encourage greywater recycling in new construction, support use of rain barrels and other measures. Consider water quality standards for emerging threats, such as cyanobacteria. Reduce road salt on all state-owned properties and support municipalities, private landowners, and homeowners to do the same.

PROTECT WETLANDS & STREAMS

Expand protections for vernal pools by supporting efforts to increase certification of potential vernal pools and consider increasing regulatory protections. Expand salt marsh buffers to help facilitate salt marsh migration with sea-level rise. Assess increased protections for intermittent streams, which are important for ephemeral habitats.



ELIMINATE HARMFUL PESTICIDES

Conduct a scientific and individual review of second-generation anti-coagulant rodenticides (SGARs), which harm wildlife,[52] and reduce their use. Ensure reporting of application to protect public health and wildlife. Encourage integrated pest management on state, municipal, and private property. Support implementation of Mosquito Control for 21st Century recommendations.[53] Educate the public impacts of pesticides on pollinators and reduce their use.

REDUCE PLASTICS IN OUR ENVIRONMENT

Reduce single-use plastics, which enter waterways and harm fish and wildlife. Promote less harmful alternatives and recycling incentives, like better bottle redemption incentives. Support installation of trash booms on urban rivers. Increase support for volunteer trash cleanups of our rivers, coasts, and marine environment. Support cleanups of marine debris and ghost or derelict lobster gear, with commercial fishers, partners, and the public.

[52] Murray, M., Tufts Wildlife Clinic. (2020). Continued Anticoagulant Rodenticide Exposure of Red-tailed Hawks in the Northeastern United States with an Evaluation of Serum for Biomonitoring. EnvironmentalToxicology and Chemistry, Vol. 39 Issue 11. [53] Massachusetts Mosquito Control for the Twenty-First Century Task Force. (2022) Recommendations of the Mosquito Control for the Twenty-First Century Task Force.

BIODIVERSITY CONSERVATION GOAL #2
RESTORE

Many habitats that species and people rely on are degraded—care and stewardship can bring ecosystems back to health.

Humans have altered 75% of Earth's lands and 66% of our oceans.[53] In Massachusetts, many of our lands and waters are impacted by pollution, poorly-planned development, invasive species and diseases, and rising climate threats like extreme heat, increased precipitation, drought, sea-level rise, ocean acidification, and coastal erosion.

GOAL #2—RESTORE

MOST IMPORTANT HABITATS FOR SPECIES & CLIMATE RESILIENCE

Assist in the recovery and renewal of ecosystems that have been degraded, damaged, or destroyed. This can include both passive, such as monitoring, and active practices to rebuild the integrity, connectivity, and resilience of ecosystems.

CULVERTS FOR BIODIVERSITY & CLIMATE RESILIENCE By replacing undersized, failing culverts with properly sized, safe structures, we can improve stream health, water quality, public safety, and habitat for migratory fish and coldwater species like Eastern brook trout.

HABITAT DEGRADATION: BY THE NUMBERS

25,000 culverts, many are undersized [54]

3,000+ dams interrupt fish passage [55]

2,000+ river miles degraded for aquatic health [56]

72+ invasive plants are widespread in MA [57]

170 combined-sewer overflow outfalls [58]

[53] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2019). Global Assessment Report [54] Massachusetts Division of Ecological Restoration. (2018) Massachusets Stream Crossing Handbook.[55] Massachusetts Office of Dam Safety.. [56] U.S. EPA. (2025). How's My Waterway Tool: Massachusetts. [57] Massachusetts Invasive Plant Advisory Group (2022). MIPAG Plant Species Evaluation Update. [58] Massachusetts Department of Environmental Protection. (2025) 2024 Annual Sewage Notification Report.

RESTORE 75% OF MOST IMPORTANT HABITATS BY 2050

Department of Fish & Game identified key habitats for restoration based on importance to rare and at-risk species and vulnerability to climate change. By 2050, restore at least 75% of these key habitats to good ecological health through investment, partnership, and collaboration. This translates to 400,000 acres of upland and wetlands, 4,500 miles of rivers and streams, and 100,000 acres of lakes and ponds.

REMOVE OVER 300 DAMS BY 2050

Triple the pace of dam removal to remove 10% or more of the Commonwealth's 3,000+ dams by 2050 for fish and wildlife passage, ecosystem health, and climate resilience. Assess and prioritize state-owned dams for removal and prioritize removal over repair. Build fish ladders where dam removal is not feasible. Expand state investments and technical assistance for municipalities, partners, and private owners.

UPGRADE 2,500 CULVERTS BY 2050

Replace undersized, failing culverts with larger, safer structures to enhance fish passage, biodiversity, and climate resilience. Double the pace of culvert replacement by 2035 and increase six-fold by 2050 to upgrade 2,500 culverts, or 10% of 25,000 total culverts. Assess and prioritize all culverts statewide for replacement, restore connectivity in high-priority habitats, and increase investments and technical assistance for municipalities, partners, and private owners.

RESTORE LOCALLY-IMPORTANT BIODIVERSITY

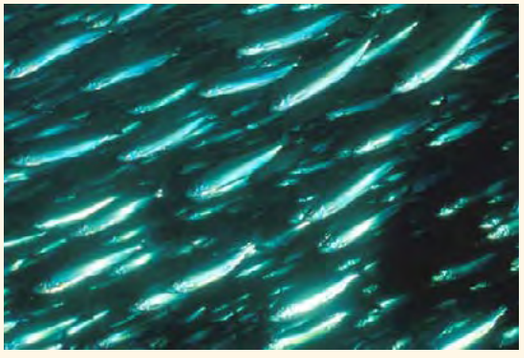
Support non-profits, municipalities, Tribes, and Environmental Justice communities to identify and restore locally-important biodiversity through grants and technical assistance. Expand investments in river and wetland restoration in urban areas. Support efforts to revitalize urban streams through daylighting, habitat restoration, trash cleanup, and engagement and education.

ACCELERATE RESTORATION & NATURE-BASED SOLUTIONS

Nature-based solutions have immediate benefits to biodiversity and climate resilience. Coordinate comprehensive interagency efforts to expedite permitting and reduce costs and time of restoration. Currently, projects can take multiple years to permit. Fast-track priority projects to less than six months through strategic policy changes and coordinated environmental review.

HABITAT STEWARDSHIP Protection alone is not enough—habitats that species rely on require ongoing stewardship and care. Prescribed fire, thinning of canopy, and invasive species removal can rejuvenate landscapes and improve wildlife habitat. For example, prescribed burns help the imperiled whip-poor-will, which relies on fire-disturbed landscapes, make a comeback.

URBAN BIODIVERSITY Restoring biodiversity locally matters. Support community-led efforts to revitalize urban rivers and streams with wetland restoration, green infrastructure, and daylighting to restore native species like swamp rose mallow, a wetland flower.



RESTORE FISH PASSAGE IN ALL COASTAL WATERSHEDS

Launch a comprehensive approach to restoring water quality and streamflow, coastal resilience, and fish passage in every coastal watershed in Massachusetts. Reestablish river herring, American eel, American shad, and other migratory fish to their historic ranges. Build fish ladders on coastal rivers where dam removal is not feasible. Support local herring celebrations, fish counts, and Indigenous food sovereignty.

RESTORE SALT MARSHES & FACILITATE MIGRATION

Restore salt marshes from historic human impacts like tidal restrictions, ditches, and fill to boost coastal resilience, carbon sequestration, and marine fisheries productivity. Comprehensively prioritize tidal and transitional crossings in all coastal wetlands for restoration and advance projects that will have the biggest benefit for coastal resilience, wetland health, and facilitation of salt marsh migration.

RESTORE MOST IMPORTANT MARINE HABITATS

Set specific marine goals for 2030, 2040, and 2050 with federal, state, municipal, Tribal, academic, conservation, and commercial fishing partners for eelgrass, kelp and rockweed, complex hard bottom, naturally occurring shellfish, and other unique or sensitive habitats. Restoration of these critical habitats will boost marine productivity and resilience of sustainable fisheries, even amid climate shifts.

ARTIFICIAL REEF & OYSTER RESTORATION

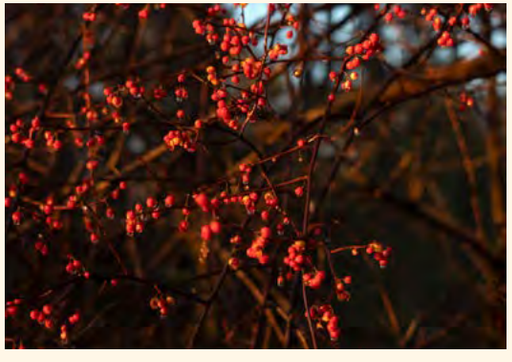
Artificial reefs are intentionally placed structures that provide important fish habitat. Increase artificial reef deployments and oyster reef restoration in areas where naturally occurring marine habitats have been lost to improve coastal resilience, water quality, marine productivity, and recreational fishing opportunities. Increase monitoring at existing artificial reef sites to better understand marine biodiversity.

HERRING MIGRATION Each spring, many gather at coastal rivers to celebrate the return of migratory fish and participate in community counts, which contribute to science and monitoring. In areas where fish passage isn't possible, volunteer efforts help fish pass upstream. For many Indigenous peoples, herring are culturally significant and important for food sovereignty.

ARTIFICAL REEFS Massachusetts has several artificial reefs coastwide, including projects in Yarmouth, Dartmouth, Boston Harbor, and Harwich. Black sea bass, lobster, blue mussel, squid, flounder, tautog, and more have been documented at artificial reef habitats.

GROW NATIVE FOR POLLINATORS & BIRDS

Develop policy and guidance to support state agencies in planting native species and creating wildlife habitat on state-owned lands, modeled off the Department of Conservation & Recreation's Growing Wild program. Support regional efforts to build native plant seed banks and nursery stock for restoration projects. Support municipal leaders in increasing pollinator habitat on city or town-owned lands. Provide grants and guidance to community-based partners, Tribes, and private landowners.



INVASIVE SPECIES

Dramatically increase capacity and collaboration statewide to track and remove invasive terrestrial, aquatic, and marine plants and animals. Ensure invasive plants are not sold in nurseries. Ban sale of non-native marine fishing baits and invasive freshwater fish as pets and bait. Incentivize planting of native species on large commercially-owned, state, municipal, and Tribal properties. Provide increased funding, educational resources, and coordination for volunteer-led invasive species removal efforts.

SET HABITAT RESTORATION GOALS

Set habitat goals for the state, with opportunities for public input. Habitat goals will address a full spectrum of habitat types for wildlife, ranging from open canopy to wetlands to mature forests. Through this process, designate forest reserves to enhance carbon sequestration.

ONE HEALTH

One Health recognizes that the health of people is closely connected to the health of animals and our shared environment. Expand a formal state One Health program to expand disease surveillance, zoonotic disease transmission prevention, and disease management for wildlife, livestock, and human health. Foster interagency coordination and develop communications and educational programming for underrepresented communities. Increase in-state and regional diagnostic testing capabilities to produce fast and efficient results. Expand science-based approaches to overabundant white-tailed deer management that prioritize ecosystem health and forest regeneration.

HABITAT DIVERSITY Many species rely on a diversity of habitats—from grasslands and shrublands to young forests to mature and old growth forests. Natural disturbances like floods and fires that once shaped the landscape and created this diversity of habitat types are now restricted by human development.

As a result, species that rely on open fields and young forest habitat are declining at an alarming rate—grassland and shrubland birds like bobolinks and meadowlarks, birds that nest in young forests like the chestnut-sided warbler, and once-common species like the New England Cottontail rabbit all need swift action to ensure their recovery.

Old growth forests are rare in Massachusetts and provide unique characteristics for sustaining forest biodiversity. They also store significant amounts of carbon and provide valuable ecosystem services and recreational opportunities.

BIODIVERSITY CONSERVATION GOAL #3
SUSTAIN

Biodiversity supports the local food systems we all rely on—we can grow access to healthy, sustainable foods for all.

Our farms provide a bounty of healthy produce and habitat for wildlife and pollinators. Our commercial fisheries are the backbone of our nation-leading blue economy, working waterfronts, and coastal culture. Massachusetts lands and waters provide abundant wild foods—brook trout, deer, wild turkey, American oyster, and more. Yet, many people in our state face food insecurity and lack access to these foods.

GOAL #3—SUSTAIN

FISHERIES, FARMS, AND FOOD SECURITY

Ensure that the Commonwealth's farms, working forests, commercial and recreational fisheries, shellfish beds, and game populations are conserved and sustainably managed to support healthy, climate-resilient ecosystems, food security, and a vibrant local economy.

FOREST FOODS Healthy, resilient working forests can provide sustainable local wood products, foraging, and hunting and fishing opportunities. Edible mushrooms like hen-of-the-woods can be found and foraged.

SUPPORT BIODIVERSITY ON FARMS

Support the Massachusetts Farmland Action Plan with an emphasis on farmland protection, regenerative farming, biodiversity in soils and edges, pollinators, and sustainability practices. Support No Net Loss of Farmland to preserve our agricultural heritage. Provide incentives to farmers to manage habitat for wildlife. Support Indigenous-led farms and incorporate traditional ecological knowledge. Expand community gardens and urban farming to increase access to fresh food in cities.

SUSTAIN OUR BLUE ECONOMY

Sustain our nation-leading blue economy, commercial and recreational fisheries, and aquaculture industry by restoring marine habitats and biodiversity, climate resilience, and water quality. Support working waterfronts with grants to enhance resilience of shoreside infrastructure, business operations, public health and shellfish testing, and accessible fishing piers and docks.

INCREASE FOOD SECURITY WITH WILD FOODS

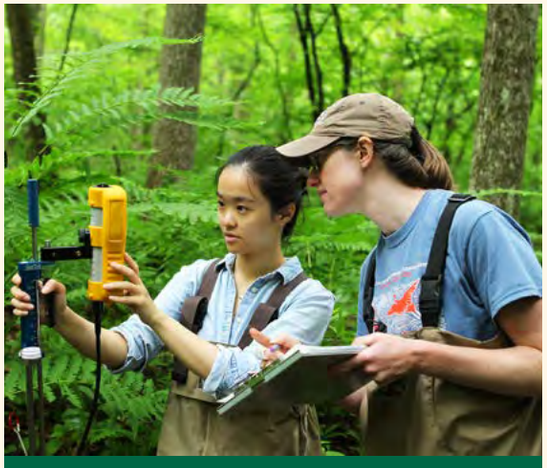
Increase amount of sustainable seafood and venison provided to people experiencing food insecurity through the expansion of the MassWildlife Hunters Share the Harvest program, launch of Division of Marine Fisheries Share the Catch program for seafood, and the Department of Agricultural Resources Food Ventures program.

SUPPORT LOCAL FOOD SYSTEMS

Strengthen outreach and communications campaigns promoting fresh, local Massachusetts-grown agricultural products; healthy, sustainable seafood; local wood products; and foraged foods. Connect these choices to biodiversity, sustainability, reducing one's climate and ecological footprint, supporting local economies, and strengthening culture and community resilience.

INCREASE ACCESS TO HUNTING, FISHING, FORAGING

Increase access to hunting, fishing, and foraging opportunities on private and public lands, when appropriate. Increase outdoor education opportunities for people of all backgrounds and abilities, with a focus on engagement of Indigenous people and Tribes and underserved and Environmental Justice communities.



RESEARCH & MONITORING Implement a targeted monitoring program across environmental agencies to track biodiversity metrics, building on existing efforts. Expand use of best-available technologies, such as drones, and explore use of emerging tools like eDNA to enhance research capacity.

TRADITIONAL ECOLOGICAL KNOWLEDGE Engage Indigenous peoples and Tribes to explore ways to weave Traditional Ecological Knowledge (TEK) into work to protect and restore biodiversity for generations to come.

BIODIVERSITY CONSERVATION GOAL #4
CONNECT

We all have a role to play in this effort—each and every person can make a meaningful difference for biodiversity.

More than two-thirds of Massachusetts residents believe we need to do more to conserve land, water, and wildlife.[53] Disparities exist in access to nature—underserved and Environmental Justice communities lack green spaces that protect public health, provide outdoor recreation opportunities, and provide refuge for wildlife in urban areas. Through education, engagement, and access, we can connect people of all ages to the wonders of nature, create a lasting movement for biodiversity, and ensure that all enjoy its benefits.

GOAL #4—CONNECT

ALL PEOPLE & NATURE

Ensure that all people are empowered to take action to conserve biodiversity and forge a sense of appreciation, belonging, and connection to nature and wildlife.

NATURE LITERACY We can inspire all to care for the world around us by bringing nature into the classroom, afterschool programming, vocational training, and community engagement. Here, MassWildlife biologists educate the public about the imperiled box turtle and how they can support endangered species conservation.

[53] Responsive Management, MassWildlife, Mass Audubon, Trout Unlimited, and The Nature Conservancy. (2020) Massachusetts Public Attitudes Survey.

NATURE IN THE NEIGHBORHOODS

Develop Nature in the Neighborhoods initiative to ensure equitable access to nature, restore biodiversity in urban and suburban neighborhoods, increase wildlife education, and support locally-led efforts. Launch the Local Biodiversity Grants program for non-profits, Tribes, and municipalities. Develop a Biodiversity Toolkit for municipalities and Tribes with biodiversity best practices like better pesticide alternatives, dark skies efforts to address light pollution, low impact development, native plants and pollinators, and invasive species management.

NATURE IN THE SCHOOLS

Launch the Nature in our Schools Initiative to increase nature literacy for all students. Identify gaps in nature-based curriculum and develop programming focused on nature and biodiversity for K–12, after-school, and summer programs. Expand support for existing environmental education programs like Envirothon, a leading environmental education program for high school students, and Teaching with Trout. Fund a free state parks pass program for families with children in the 4th grade.

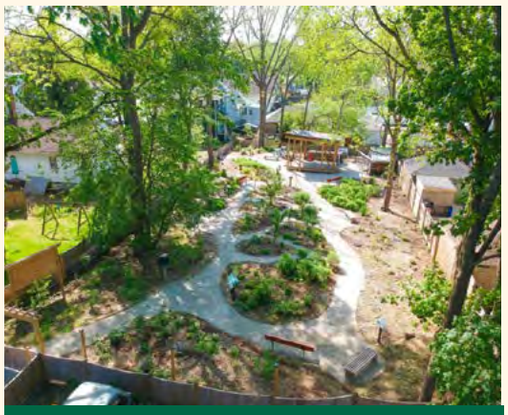
NATURE AT WORK

Modeled on the Clean Energy Center Workforce Needs Assessment[54], conduct Biodiversity Workforce Assessment to identify gaps, licenses, and trainings needed to launch the next generation of biodiversity stewards. Develop targeted Career Innovation Pathways for careers in biodiversity conservation and restoration for high school and vocational-technical programs. Create the Governor's Youth & Elders Biodiversity Council and create paid internship opportunities.

NATURE FOR ALL

Launch a public engagement campaign to promote biodiversity stewardship. Develop a Commonwealth Biodiversity Trail and declare an official Massachusetts Biodiversity Day. Expand participatory science and long-term volunteer efforts for biodiversity monitoring and stewardship. Increase Universally Accessible Trails for people with disabilities through Trails for All. Create a state-of-the-art outdoor skills education facility near public transportation. Support development of a visitor center for Stellwagen Bank National Marine Sanctuary.

[60] Massachusetts Clean Energy Center. (2023). Powering the Future: A Massachusetts Clean Energy Workforce Needs Assessment.

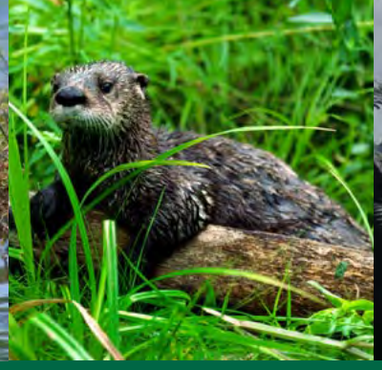


LOCAL BIODIVERSITY GRANTS PROGRAM

Launch Local Biodiversity Grants Program for municipalities, Tribes, and non-profits to support community-led efforts to protect and restore biodiversity on the neighborhood scale. Fund efforts to build pollinator gardens, community gardens and food forests, microforests and habitats, restore urban rivers and streams, conduct coastal and river cleanups, remove invasive species, expand tree canopy, and educate and engage the public. Provide technical assistance to municipalities and Tribes to develop Biodiversity Plans in partnership with community organizations to guide these efforts on a local and regional level.

TOGETHER, FOR NATURE

Everyone has a role to play in this effort: launch a public engagement campaign to make taking action for biodiversity in our every day lives tangible and accessible.



FOUNDATIONS FOR SUCCESS

The intertwined crises of biodiversity and climate may be our greatest challenge—but they're also our greatest opportunity.

To achieve this ambitious vision, Massachusetts must act with urgency and coordinate our efforts. We recommend the following core commitments and governance.

CORE COMMITMENTS

WHOLE-OF-GOVERNMENT

Massachusetts must take a whole-of-government, whole-of-Commonwealth approach to rebuild biodiversity—every state agency and municipality has a role to play.

PARTNERSHIP & COLLABORATION

We know we can't do this alone. Cultivate robust partnerships and catalyze a culture shift to inspire all people to take action in their everyday lives through education and sustained engagement.

INDIGENOUS LEADERSHIP

Cultivate relationships of respect, reciprocity, and care with Indigenous people and Tribes. Support Indigenous-led stewardship of lands and waters, traditional ecological knowledge, and food sovereignty.

ENVIRONMENTAL JUSTICE

Ensure equitable distribution of the benefits of rebuilding biodiversity. Invest in underserved communities and support community-led efforts to create biodiverse urban green spaces for all.

GOVERNANCE & DURABILITY

VALUE & INVEST IN BIODIVERSITY

Durably fund this effort through innovative financing mechanisms like biodiversity credits, creative public-private partnerships, and exploring every opportunity for increased federal and state investments.

MASSACHUSETTS BIODIVERSITY PARTNERSHIP

Launch a statewide public-private partnership to guide implementation, accelerate progress, drive funding, and sustain engagement to achieve these ambitious goals.

ACCELERATE RESTORATION & NATURE-BASED SOLUTIONS

Streamline permitting processes and reimagine policies to reduce cost and time to accelerate the pace of restoration to meet these ambitious targets.

INTER-AGENCY BIODIVERSITY TASK FORCE

Bring together staff from across the whole-of-government to coordinate efforts to implement these goals and strategies.

OFFICE OF BIODIVERSITY

Create the Department of Fish & Game Office of Biodiversity and hire a Biodiversity Officer to lead implementation of goals and strategies, coordinate cross-agency collaboration, and engage partners, municipalities, and the public.

The time is now to come together and invest in a nature-positive future for Massachusetts.

This is an unprecedented opportunity to make a historic commitment to rebuilding biodiversity for people and wildlife.

TO LAUNCH THIS AMBITIOUS EFFORT:

We recommend the Healey-Driscoll Administration commit to transformative investments over the next five years to double the pace of land protection and restoration, support a whole-of-government approach, and boost local capacity to achieve these goals.

IMMEDIATE ACTIONS

ENVIRONMENTAL BOND

Increase investments in biodiversity conservation across all Secretariats and fund the Local Biodiversity Grant program to support municipalities, Tribes, and community-based organizations.

DEDICATED FUNDING

Create a sustained dedicated funding source for biodiversity conservation and restoration, as several other states have done to great success.

INCENTIVES FOR BIODIVERSITY

Expand financial incentives for individuals and entities to support biodiversity conservation and restoration, based on existing successful models for land conservation. Increase the Commonwealth Land Conservation Tax Credit.

BIODIVERSITY CRITERIA FOR STATE GRANTS

Incorporate biodiversity criteria into relevant existing state grant programs to maximize state investments in projects that benefit nature and people.

DEVELOP INNOVATIVE FUNDING MECHANISMS

BIODIVERSITY CREDITS

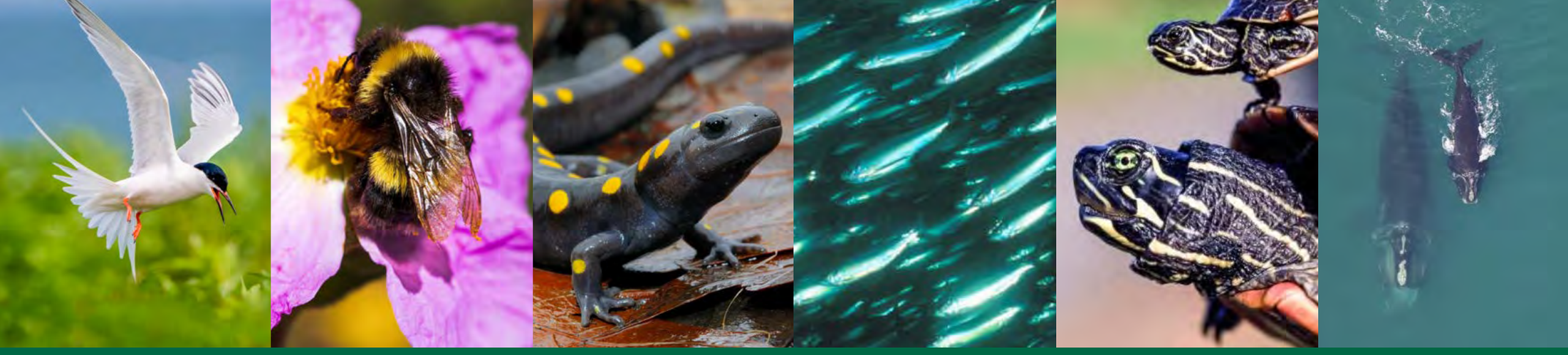
Biodiversity credits are an economic instrument that allow private companies to finance conservation activities. Explore the potential to develop frameworks to quantify net-positive benefits of biodiversity conservation and leverage private financing to support these goals.

BLUE CARBON PROGRAM

Expand the Department of Fish & Game Blue Carbon Program to increase investments in protection and restoration of coastal wetlands by quantifying their ability to store and sequester carbon.

1% FOR MASSACHUSETTS BIODIVERSITY

Encourage companies to meet sustainability and climate goals by donating 1% of their annual revenue to fund local biodiversity conservation efforts, following the national model of 1% for the Planet.



TOGETHER FOR BIODIVERSITY

By committing to this ambitious plan to rebuild biodiversity for 2050, Massachusetts can lead the way to a future where both nature and people thrive.

Achieving these ambitious goals will take all of us—together. Everyone has a role to play in this movement.

This is Massachusetts' moment—will we rise to protect our irreplaceable biodiversity, for the benefit of species and people?

Biodiversity is the foundation for life in Massachusetts—it anchors our history, heritage, and culture, sustains our health, well-being, food security, and economy, and enriches our lives. If we fail to act, we risk losing not only these ecosystem services, but the rich, wonderous diversity of thousands of plants, mammals, birds, bees, fish, fungi, insects and more that call Massachusetts home.

But if we step up to lead, we can be a beacon of hope for other states and even countries, charting a path forward to halt and reverse biodiversity loss and creating a world where all life can thrive. **Will you join us in this effort?**

EXPLORE THE FULL GOALS & STRATEGIES:

Visit **mass.gov/biodiversity** to see the full matrix of goals and strategies and appendices that support this plan.

- **BIODIVERSITY GOALS MATRIX**
- **APPENDIX A -** Global & National Context
- **APPENDIX B -** Review of Federal and State Laws, Regulations, Policies, and Plans
- **APPENDIX C -** Review of Existing State Efforts to Conserve Biodiversity
- **APPENDIX D -** Summary of Public Engagement
- **APPENDIX E -** Contributors

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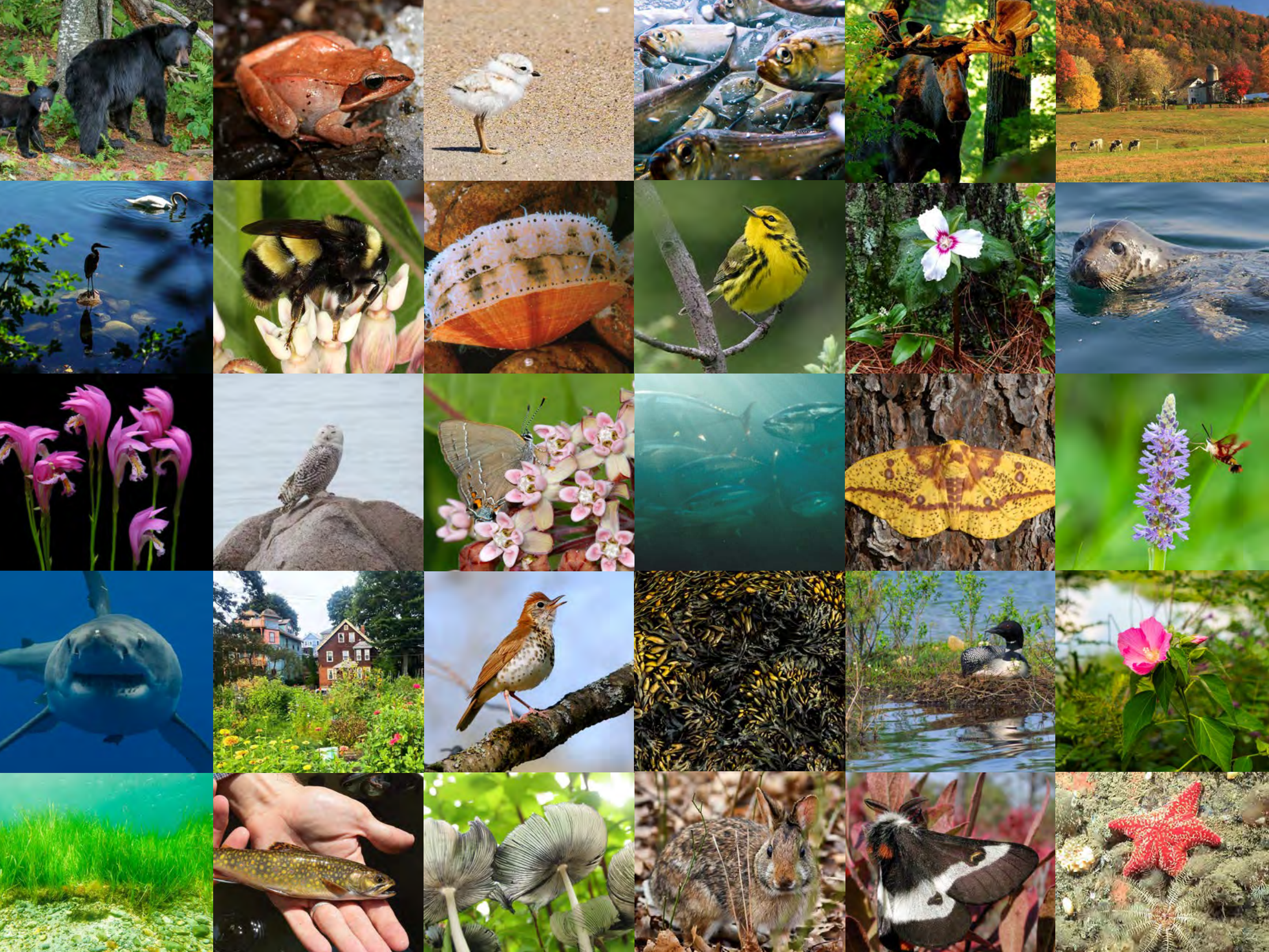

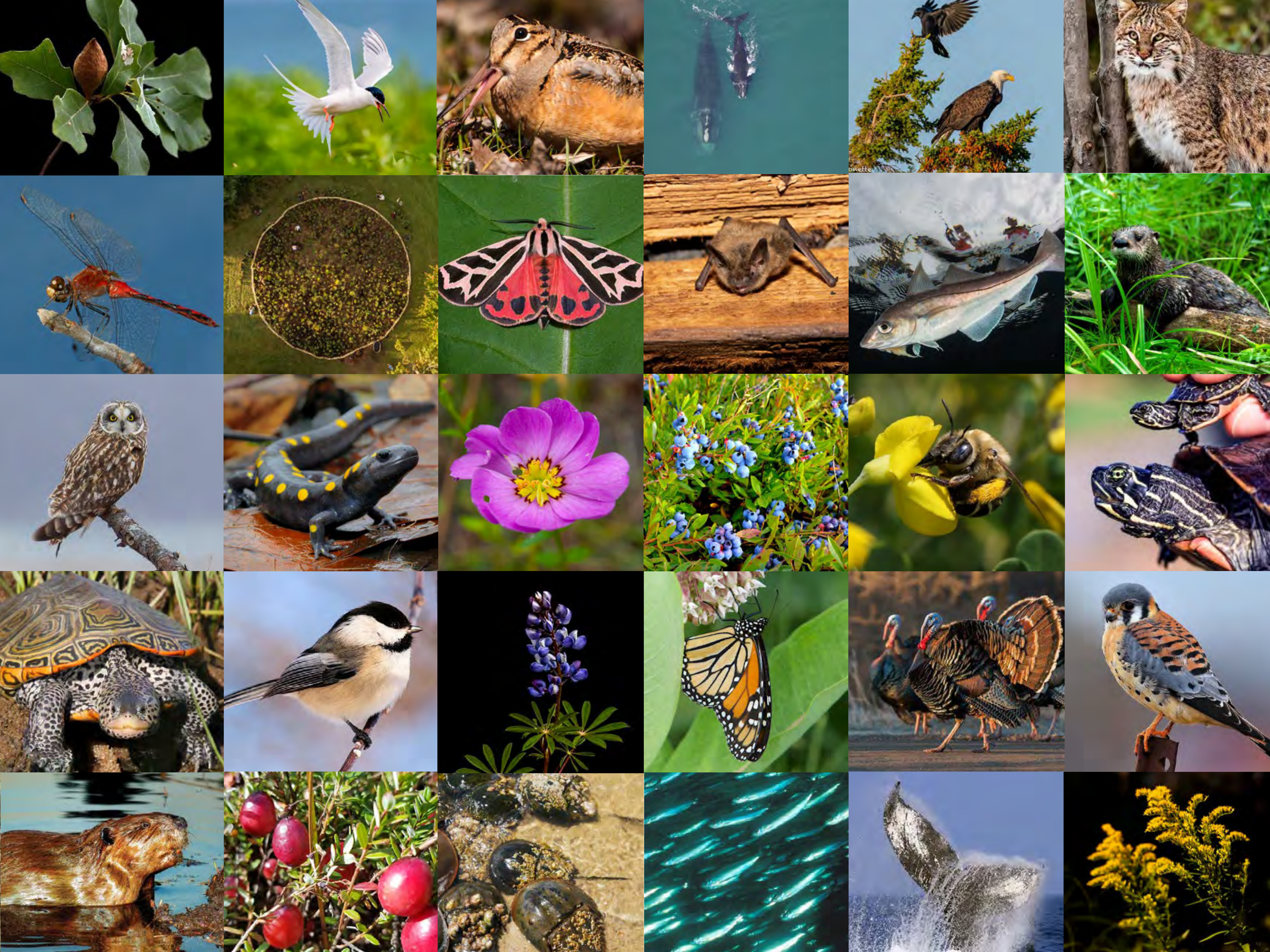

BIODIVERSITY CONSERVATION GOALS FOR THE COMMONWEALTH

A whole-of-government approach to conserve biodiversity in Massachusetts for 2030, 2040, and 2050.

Learn more at **mass.gov/biodiversity**

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