

# Southeast Conservation Blueprint Summary

for Virginia

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Created 10/11/2024

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[The Southeast Conservation Blueprint 2024](#)



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## About the Southeast Blueprint

The Southeast Conservation Blueprint is the primary product of the [Southeast Conservation Adaptation Strategy](#) (SECAS). It is a living, spatial plan to achieve the SECAS vision of a connected network of lands and waters across the Southeast and Caribbean. The Blueprint is regularly updated to incorporate new data, partner input, and information about on-the-ground conditions.

The Blueprint identifies priority areas based on a suite of natural and cultural resource indicators representing terrestrial, freshwater, and marine ecosystems. A connectivity analysis identifies corridors that link coastal and inland areas and span climate gradients.

For more information:

- Visit the [Blueprint webpage](#)
- Review the [Blueprint 2024 Development Process](#)
- View and download the Blueprint data and make maps on the [Blueprint page of the SECAS Atlas](#)

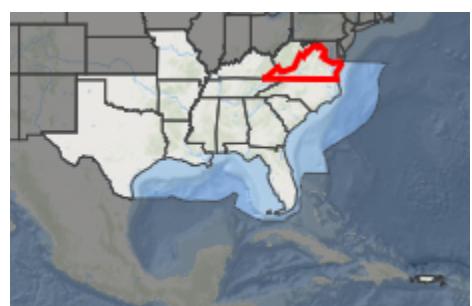
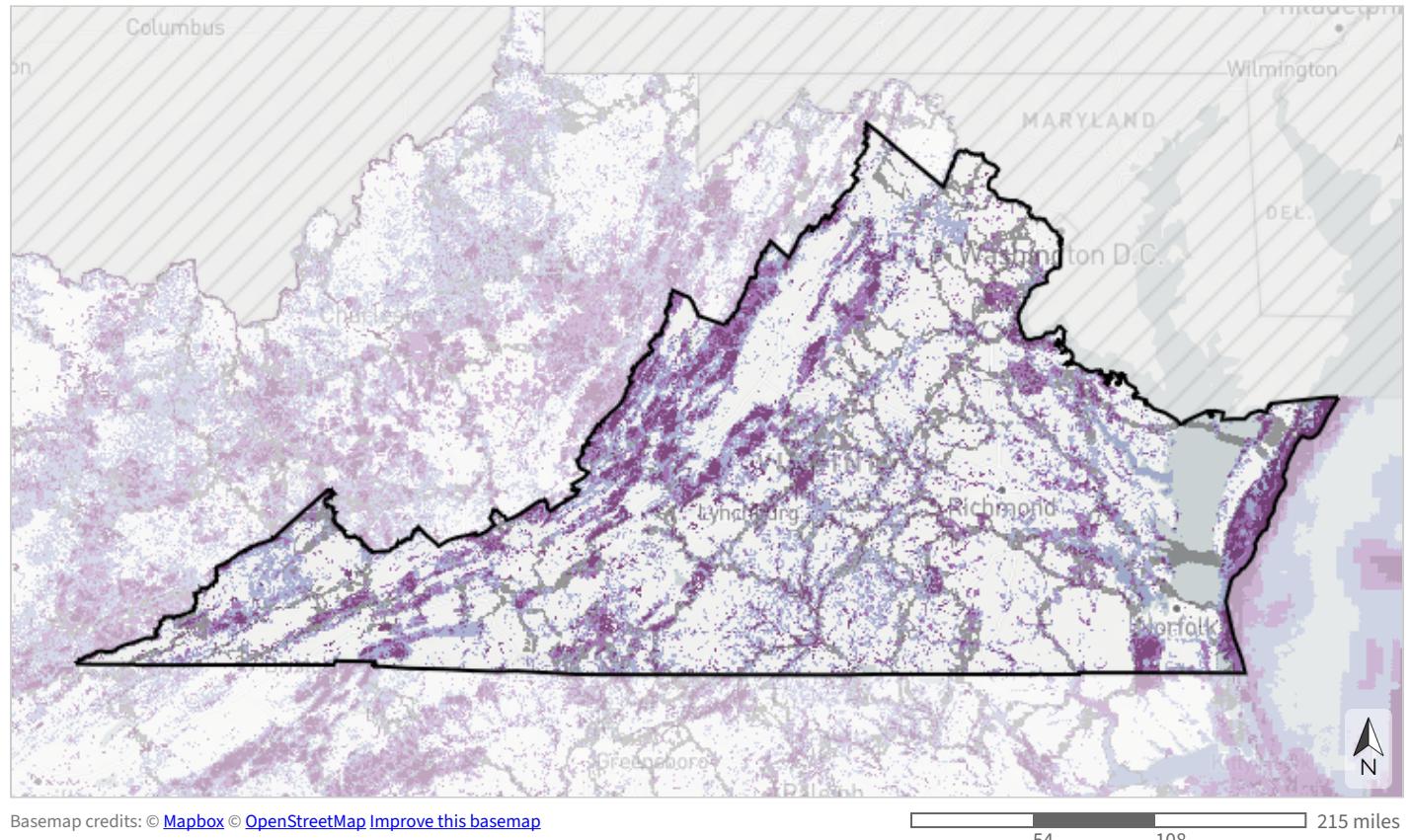
### We're here to help!

- Do you have a question about the Blueprint?
- Would you like help using the Blueprint to support a proposal or inform a decision?
- Do you have a suggestion on how to improve the Blueprint? The Blueprint and its inputs are regularly revised based on input from people like you.
- Do you have feedback on how to improve the Blueprint Explorer interface?

If you need help or have questions, [contact Southeast Blueprint staff](#) by reaching out to a member of the user support team.

We're here to support you. We really mean it. It's what we do!

# Southeast Blueprint Priorities



## Priorities for a connected network of lands and waters

- Highest priority
- High priority
- Medium priority
- Priority connections

## Priority Categories

### For a connected network of lands and waters

In total, Blueprint priorities and priority connections cover roughly 50% of the Southeast Blueprint geography.

#### Highest priority

Areas where conservation action would make the biggest impact, based on a suite of natural and cultural resource indicators. This class covers roughly 10% of the Southeast Blueprint geography.

#### High priority

Areas where conservation action would make a big impact, based on a suite of natural and cultural resource indicators. This class covers roughly 15% of the Southeast Blueprint geography.

#### Medium priority

Areas where conservation action would make an above-average impact, based on a suite of natural and cultural resource indicators. This class covers roughly 20% of the Southeast Blueprint geography.

#### Priority connections

Connections between priority areas that cover the shortest distance possible while routing through as much Blueprint priority as possible. This class covers roughly 5% of the Southeast Blueprint geography.

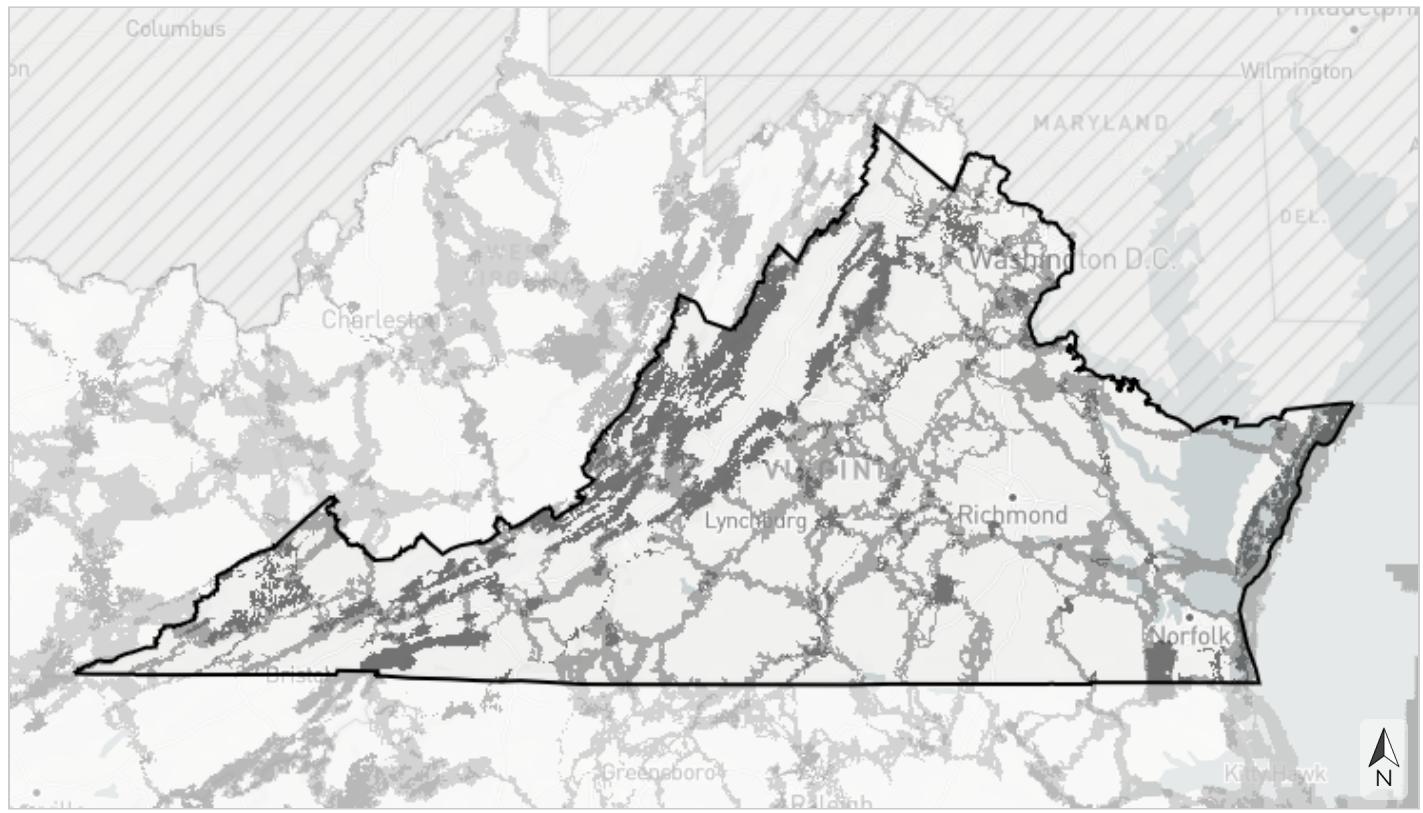
Table 1: Extent of each Blueprint priority category within Virginia.

Priority Category	Acres	Percent of Area
Highest priority	2,054,303	7.5%
High priority	3,182,311	11.6%
Medium priority	5,394,371	19.7%
Priority connections	2,480,115	9.1%
Lower priority	14,249,179	52.1%
<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

## Hubs and Corridors

The Blueprint uses a least-cost path connectivity analysis to identify corridors that link hubs across the shortest distance possible, while also routing through as much Blueprint priority as possible.

In the continental Southeast, hubs are large patches (~5,000+ acres) of highest priority Blueprint areas and/or protected lands.



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54 108 215 miles



Hubs  
 Corridors

*Table 2: Extent of hubs and corridors within Virginia.*

Type	Acres	Percent of Area
Hubs	3,653,325	13.4%
Corridors	5,642,889	20.6%
Not a hub or corridor	18,064,067	66.0%
<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

# Indicator Summary

Table 3: Terrestrial indicators.

Indicator	Present
<a href="#">Amphibian &amp; reptile areas</a>	✓
<a href="#">East Coastal Plain open pine birds</a>	✓
<a href="#">Equitable access to potential parks</a>	✓
<a href="#">Fire frequency</a>	✓
<a href="#">Grasslands and savannas</a>	✓
<a href="#">Greenways &amp; trails</a>	✓
<a href="#">Intact habitat cores</a>	✓
<a href="#">Landscape condition</a>	✓
<a href="#">Resilient terrestrial sites</a>	✓
<a href="#">South Atlantic forest birds</a>	✓
<a href="#">South Atlantic low-urban historic landscapes</a>	✓
<a href="#">Urban park size</a>	✓

Table 4: Freshwater indicators.

Indicator	Present
<a href="#">Atlantic migratory fish habitat</a>	✓
Gulf migratory fish connectivity	-
<a href="#">Imperiled aquatic species</a>	✓
<a href="#">Natural landcover in floodplains</a>	✓
<a href="#">Network complexity</a>	✓
<a href="#">Permeable surface</a>	✓

Table 5: Coastal &amp; marine indicators.

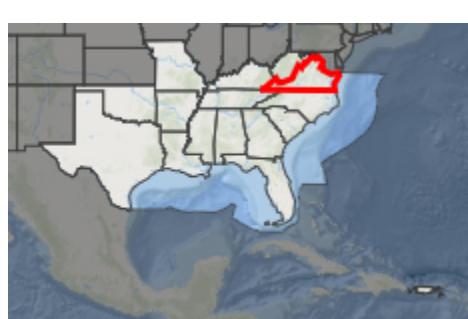
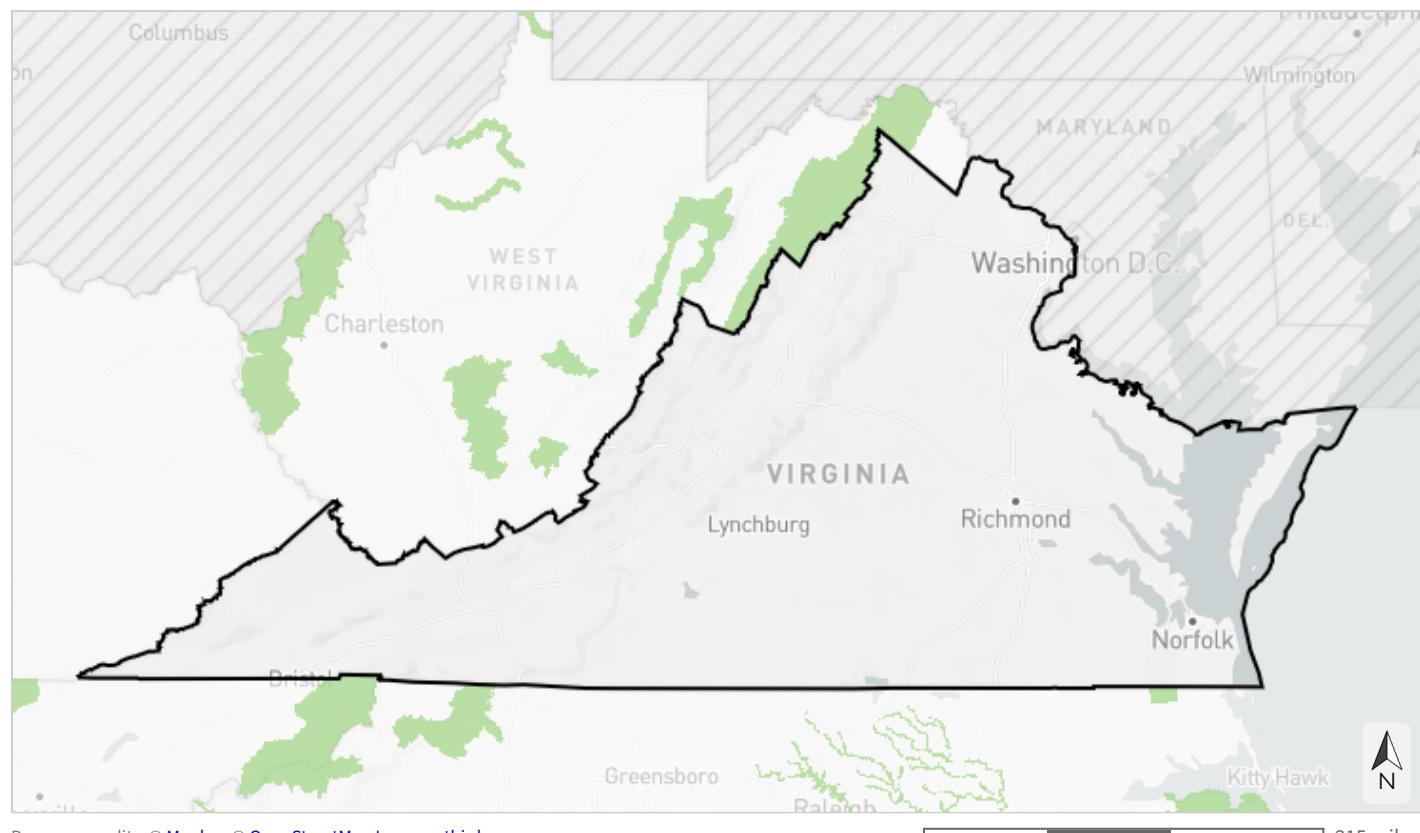
Indicator	Present
<a href="#"><u>Atlantic coral &amp; hardbottom</u></a>	✓
Atlantic deep-sea coral richness	-
<a href="#"><u>Atlantic estuarine fish habitat</u></a>	✓
<a href="#"><u>Atlantic marine birds</u></a>	✓
<a href="#"><u>Atlantic marine mammals</u></a>	✓
<a href="#"><u>Coastal shoreline condition</u></a>	✓
<a href="#"><u>Estuarine coastal condition</u></a>	✓
<a href="#"><u>Island habitat</u></a>	✓
Marine highly migratory fish	-
<a href="#"><u>Resilient coastal sites</u></a>	✓
<a href="#"><u>Seagrass</u></a>	✓
South Atlantic beach birds	-
<a href="#"><u>South Atlantic maritime forest</u></a>	✓
<a href="#"><u>Stable coastal wetlands</u></a>	✓



Terrestrial

## Amphibian & reptile areas

This indicator represents Priority Amphibian and Reptile Conservation Areas (PARCAs) across the Southeast. PARCA is an expert-driven, nonregulatory designation that includes places capable of supporting viable amphibian and reptile populations, places occupied by rare or imperiled species, and places rich in biodiversity or species unique to that geographic area (i.e., endemism). Reptiles and amphibians are a critical part of the Southeast region's rich biodiversity and many populations are declining in the face of threats like habitat loss, invasive species, and climate change. The PARCA dataset is maintained by the Amphibian and Reptile Conservancy and does not yet include Virginia or Kentucky.



- █ Priority Amphibian and Reptile Conservation Area (PARCA)
- █ Not a PARCA (excluding Kentucky and Virginia)

Table 6: Indicator values for amphibian & reptile areas within Virginia. A good condition threshold is not yet defined for this indicator.

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Priority Amphibian and Reptile Conservation Area (PARCA)	457	<0.1%
↓ Low	Not a PARCA (excluding Kentucky and Virginia)	0	0%
	<i>Area not evaluated for this indicator</i>	27,359,823	100.0%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

## Priority Amphibian and Reptile Conservation Areas:

### Cow Knob

The Cow Knob PARCA in the George Washington National Forest of West Virginia is part of the Allegheny Highlands, where the landscape transitions from lowland forests to high-elevation hardwood forests. The forests of Cow Knob are predominantly composed of hardwood species such as oak, maple, and hickory at lower elevations, while higher elevations support a mix of coniferous trees, including red spruce and eastern hemlock. These forests provide habitat for a variety of wildlife, including the Cow Knob salamander, an elusive and rare species found in these moist, forested environments. The area's streams and rivers harbor aquatic life and a large diversity of freshwater fish and salamanders.

### Eastern Panhandle

The Eastern Panhandle of West Virginia shows a diverse array of biological richness, supporting a wide range of plant and animal species. Forested areas are dominated by hardwoods such as oak, hickory, and maple, interspersed with patches of pine and cedar. This array of woodland habitats provides shelter and sustenance for the wood turtle, a rare species that inhabits the region's streams and riparian zones. The Potomac, Shenandoah, and Cacapon Rivers harbor diverse aquatic life, including freshwater fish, wood and spotted turtles, and numerous other amphibians and reptiles. The Eastern Panhandle's agricultural landscapes also contribute to its biological diversity, hosting orchards, vineyards, and farms that support pollinators and provide habitat for species adapted to cultivated lands. Efforts to balance conservation with urban development are crucial for preserving the biological integrity of this ecologically rich region.

### Great Dismal Swamp South

The Great Dismal Swamp South PARCA consists of the North Carolina portion of the Great Dismal Swamp. This area is the last remaining intact tract of what was once one million acres of forested wetland, and it holds immense cultural value. Extensive efforts were made from the late 1700's to mid 1900's to drain the swamp and much of the forest was clearcut for timber. The now-protected area is a refuge for remnant populations of priority species such as the timber rattlesnake and pine barrens tree frog. This PARCA is threatened from the effects of climate change and human development, such as increased flood and drought periods and urban sprawl. Continued conservation efforts to restore hydrology, reduce pollution into wetlands, and prevent habitat destruction will be needed to preserve this delicate ecosystem.

### **Northern Blue Ridge**

The Northern Blue Ridge PARCA occurs in the Blue Ridge Mountain ecoregion. It is largely made up of public lands, such as Hampton Creek Cove State Natural Area, Roan Mountain State Park, and Rocky Fork State Park. These all aid in the conservation of several focal species like the eastern hellbender and bog turtle. The limestone valleys and coves area is the smallest subregion in the Blue Ridge Mountains of Tennessee, but contains one of the most diverse and ecologically important habitats—bogs. Threats to these species and the bogs and surrounding habitats within this PARCA include sedimentation, water pollution, woody succession, hydrology changes in bogs, dams and impoundments, and illegal poaching. Recent conservation efforts of bogs and focal species have focused on improving habitat through removal of invasive species and halting the encroachment of woody succession to keep these bogs open.

### **South Fork New River**

The South Fork New River PARCA in Northwest North Carolina includes the most ecologically intact Southern Appalachian mountain bog complex, one of the rarest wetland habitat types in the state. These mountain bogs are home to the elusive bog turtle, North America's smallest turtle species and one of the most endangered turtles in the world. Both mountain bogs and bog turtles have seen drastic declines due to habitat loss and fragmentation, mostly due to ditching and draining wetlands for conversion to agricultural fields, and ecological succession. Habitat restorations that restore hydrology by streambank repair, filling ditches, removing invasive species, and clearing large woody debris will have the greatest conservation benefit for this PARCA. In addition, identifying remnant populations and acquiring land to reestablish metapopulation connectivity will safeguard populations from future development and declines.

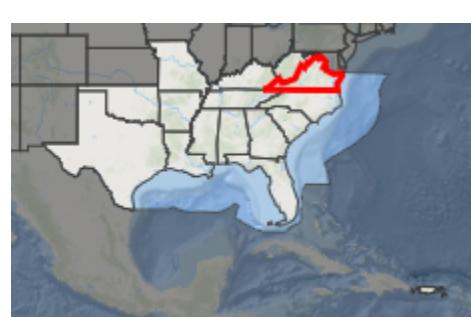
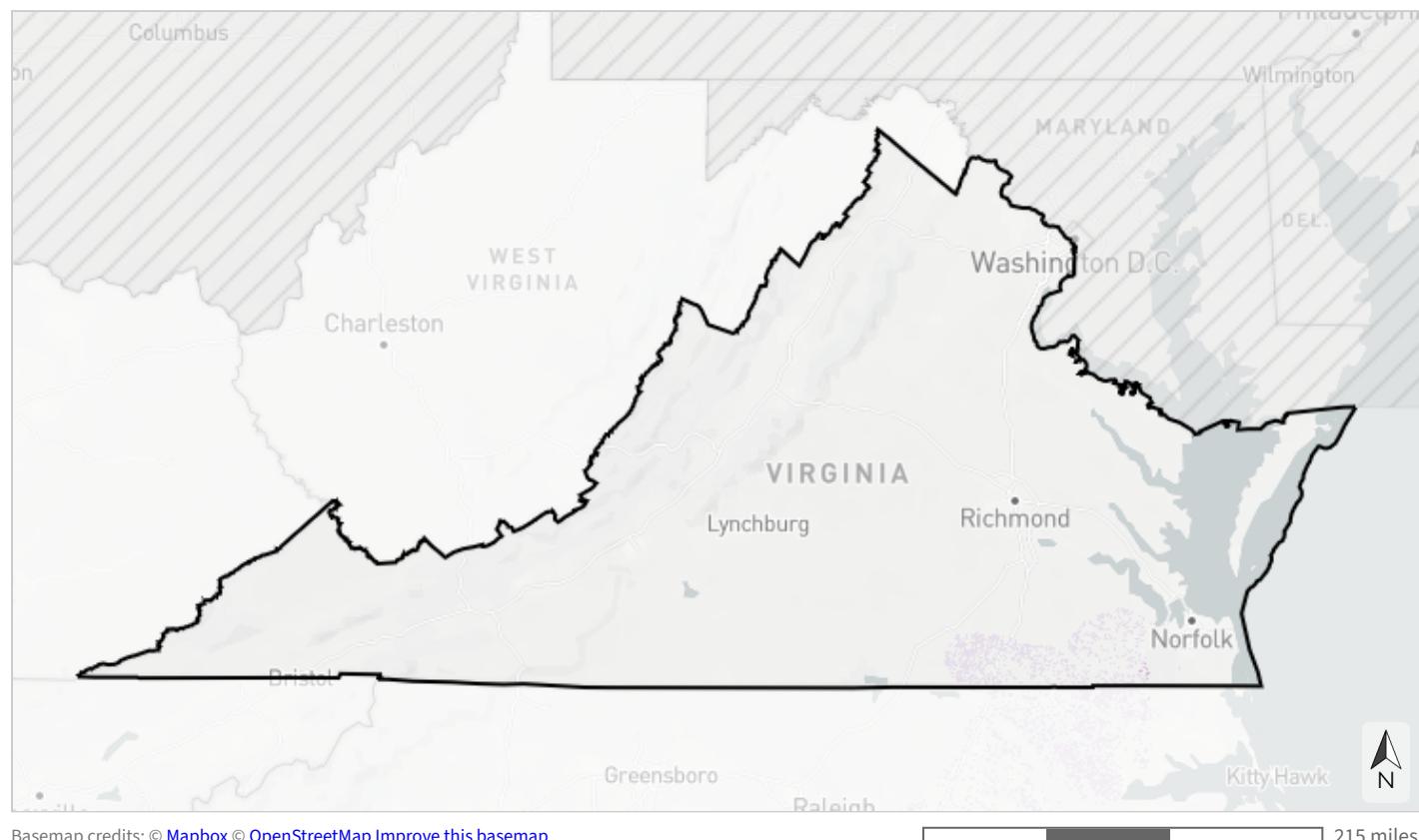
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## East Coastal Plain open pine birds

This indicator identifies areas within the historic longleaf pine range east of the Mississippi River where creating or maintaining open pine habitat would most benefit six focal species of birds (Bachman's sparrow, red-cockaded woodpecker, Henslow's sparrow, red-headed woodpecker, Northern bobwhite, brown-headed nuthatch). It prioritizes areas for open pine conservation based on suitability for longleaf pine, feasibility of prescribed burning, proximity to protected lands, habitat suitability for focal bird species, and proximity to bird source populations. It originates from the East Gulf Coastal Plain Joint Venture's prioritization of areas for open pine ecosystem restoration.



### Priority for open pine conservation for focal bird species

- High priority (score >80-100)
- Medium-high priority (score >60-80)
- Medium priority (score >40-60)
- Medium-low priority (score >20-40)
- Low priority (score 0-20)
- Not a priority (not identified as upland pine)

*Table 7: Indicator values for East Coastal Plain open pine birds within Virginia. A good condition threshold is not yet defined for this indicator.*

<b>Indicator Values: Priority for open pine conservation for focal bird species</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	High priority (score >80-100)	0	0%
	Medium-high priority (score >60-80)	0	0%
	Medium priority (score >40-60)	0	0%
	Medium-low priority (score >20-40)	2,485	<0.1%
↓ Low	Low priority (score 0-20)	331,608	1.2%
	Not a priority (not identified as upland pine)	793,216	2.9%
	<i>Area not evaluated for this indicator</i>	26,232,971	95.9%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

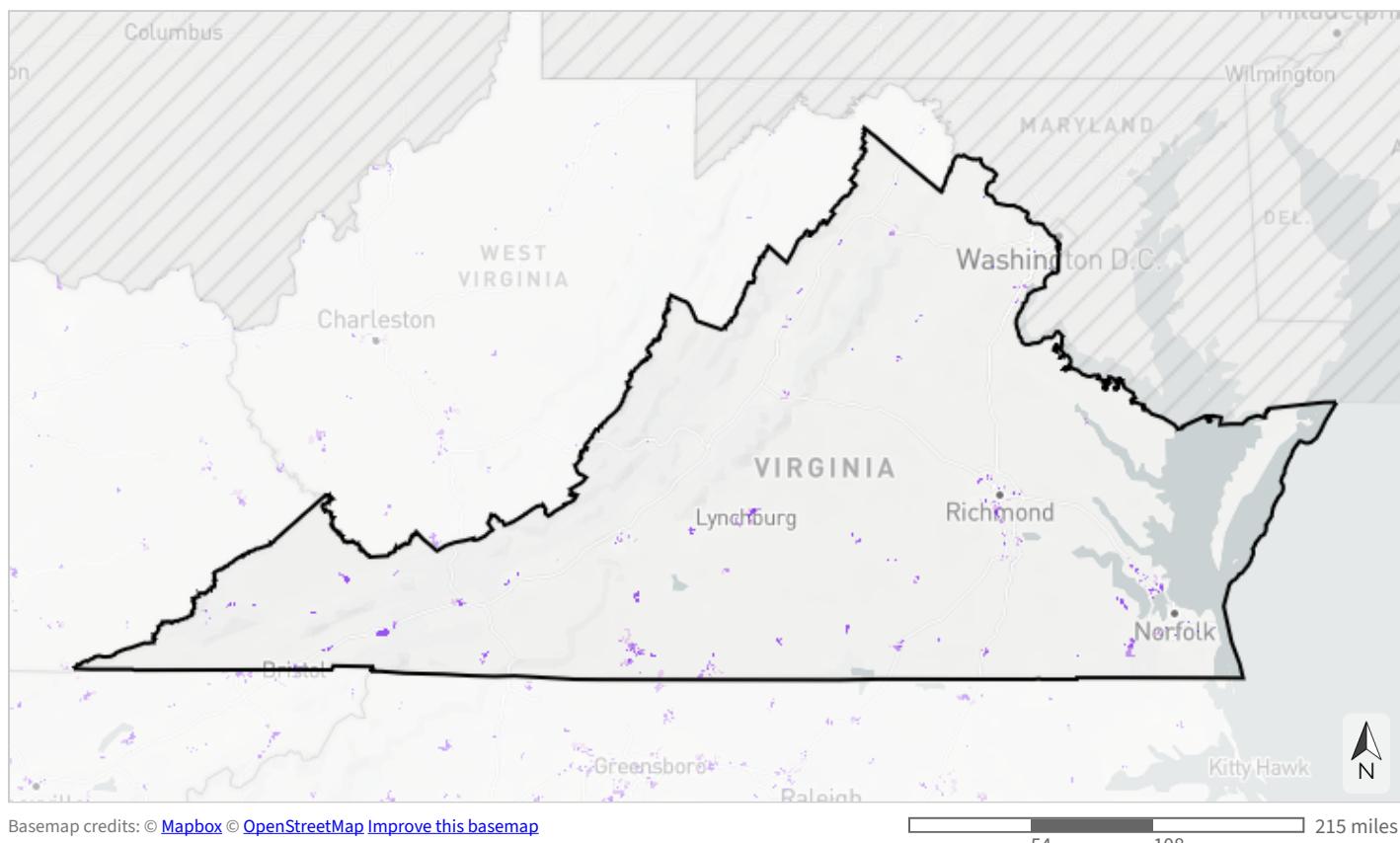
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Equitable access to potential parks

This cultural resource indicator prioritizes places to create new parks that would fill gaps in equitable access to open space within socially vulnerable communities in urban areas. It identifies areas where residents currently lack access to parks within a 10-minute walk (accounting for walkable road networks and access barriers like highways and fences), then prioritizes based on park need using demographic and environmental metrics. Parks help improve public health, foster a conservation ethic by providing opportunities for people to connect with nature, and support critical ecosystem services. This indicator originates from the Trust for Public Land's ParkServe park priority areas and the Center for Disease Control's Social Vulnerability Index.



### Priority for a new park that would create nearby equitable access

- Very high priority
- High priority
- Moderate priority
- Not identified as a priority (within urban areas)

*Table 8: Indicator values for equitable access to potential parks within Virginia. A good condition threshold is not yet defined for this indicator.*

<b>Indicator Values: Priority for a new park that would create nearby equitable access</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	Very high priority	67,144	0.2%
	High priority	69,395	0.3%
	Moderate priority	57,990	0.2%
↓ Low	Not identified as a priority (within urban areas)	25,706,086	94.0%
	<i>Area not evaluated for this indicator</i>	1,459,666	5.3%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

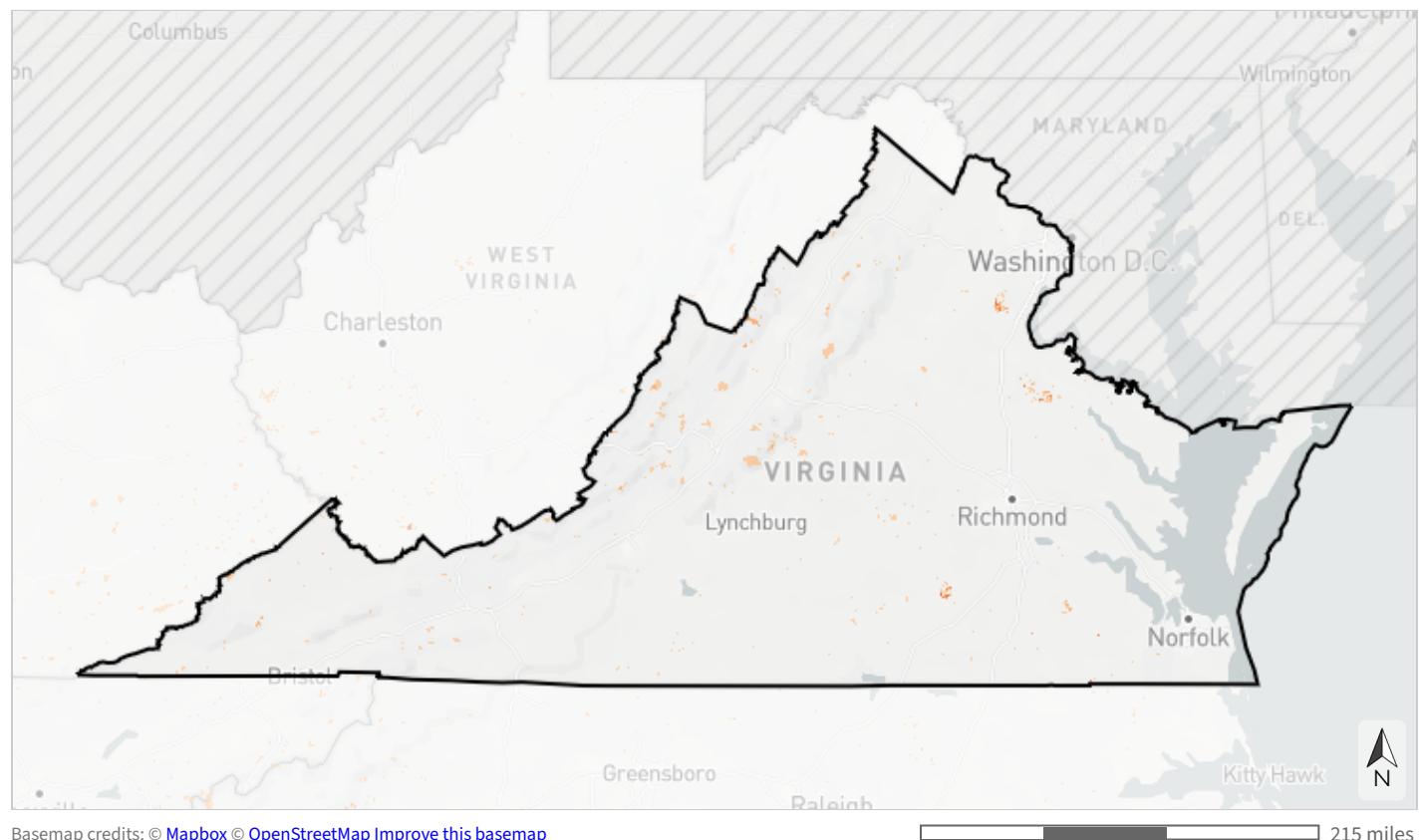
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

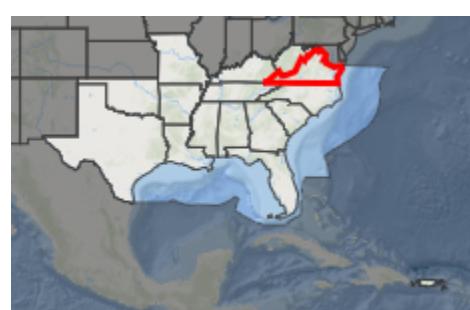
## Fire frequency

This indicator uses remote sensing to estimate the number of times an area has been burned from 2013 to 2021. Many Southeastern ecosystems rely on regular, low-intensity fires to maintain habitat, encourage native plant growth, and reduce wildfire risk. This indicator combines burned area layers from U.S. Geological Survey Landsat data and the inter-agency Monitoring Trends in Burn Severity program. Landsat-based fire predictions within the range of longleaf pine are also available through Southeast FireMap.



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- Burned 3+ times from 2013-2021
- Burned 2 times from 2013-2021
- Burned 1 time from 2013-2021
- Not burned from 2013-2021 or row crop

*Table 9: Indicator values for fire frequency within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Burned 3+ times from 2013-2021	6,546	<0.1%
	Burned 2 times from 2013-2021	22,485	<0.1%
	Burned 1 time from 2013-2021	219,875	0.8%
↓ Low	Not burned from 2013-2021 or row crop	27,099,148	99.0%
	<i>Area not evaluated for this indicator</i>	12,227	<0.1%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

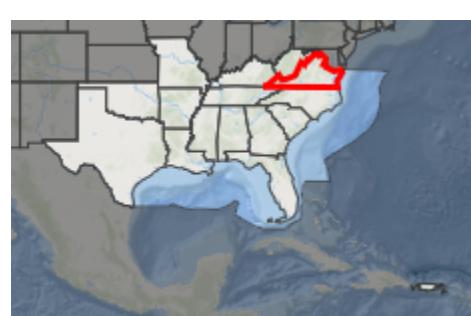
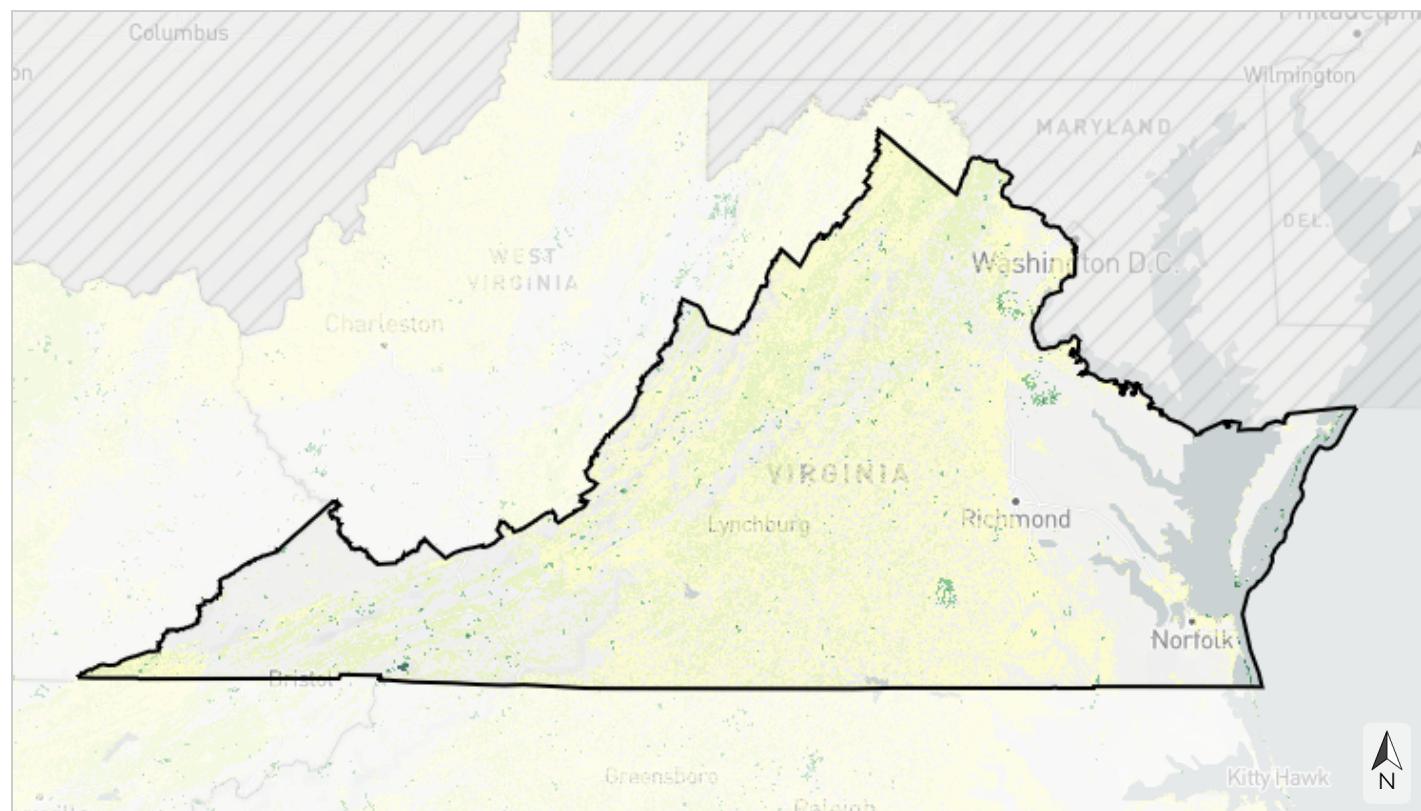
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Grasslands and savannas

This indicator represents grasslands and savannas in the southeastern United States, which support important plants, reptiles, amphibians, mammals, birds, and pollinators. It considers known grassland and savanna locations, likely locations managed for biodiversity, and surrounding pollinator buffers. It also incorporates other potential grassland and savanna locations within natural and altered landscapes, and restoration opportunities within historic locations based on past fire intervals and historic ecosystem predictions. This indicator combines data from multiple sources, including the Southeastern Grasslands Institute, the National Land Cover Database, LANDFIRE biophysical settings, Oklahoma and Texas ecological systems maps, and more.



- Known grassland/savanna
- Likely grassland/savanna >10 acres
- Likely grassland/savanna ≤10 acres
- Pollinator buffer around known or likely grassland/savanna
- Potential grassland/savanna in mostly natural landscape
- Potential grassland/savanna in more altered landscape
- Historic grassland/savanna
- Not identified as grassland/savanna

Table 10: Indicator values for grasslands and savannas within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Known grassland/savanna	5,387	<0.1%
	Likely grassland/savanna >10 acres	32,249	0.1%
	Likely grassland/savanna ≤10 acres	19,498	<0.1%
↓ Low	Pollinator buffer around known or likely grassland/savanna	212,800	0.8%
	Potential grassland/savanna in mostly natural landscape	193,914	0.7%
	Potential grassland/savanna in more altered landscape	4,490,854	16.4%
↓ Low	Historic grassland/savanna	8,844,445	32.3%
	Not identified as grassland/savanna	12,097,478	44.2%
	<i>Area not evaluated for this indicator</i>	1,463,656	5.3%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

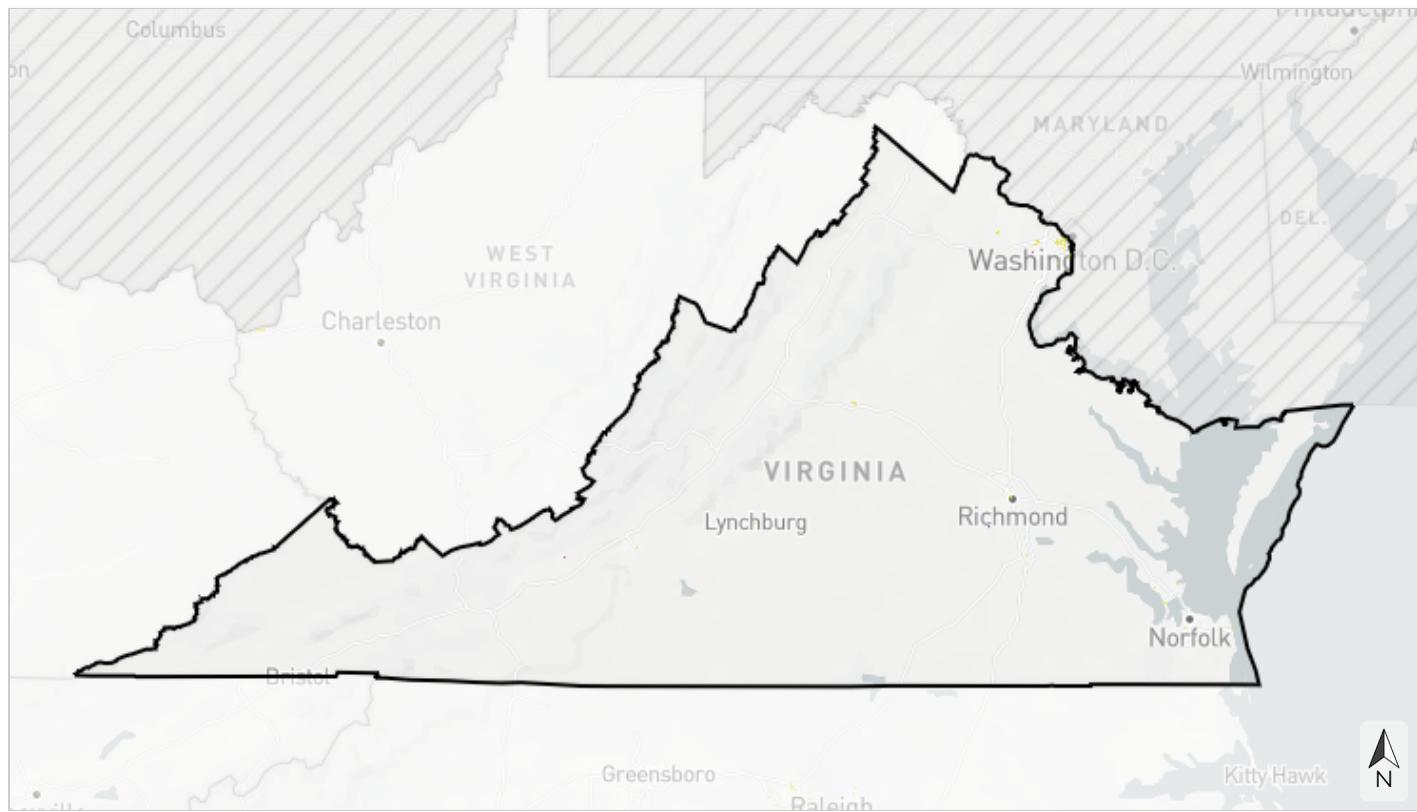
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

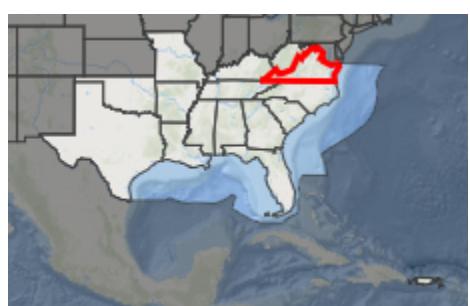
## Greenways & trails

This cultural resource indicator measures both the natural condition and connected length of greenways and trails to characterize the quality of the recreational experience. Natural condition is based on the amount of impervious surface surrounding the path. Connected length captures how far a person can go without leaving a dedicated path, based on common distances for walking, running, and biking. This indicator originates from OpenStreetMap data and the National Land Cover Database.



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54 108 215 miles



- █ Mostly natural and connected for  $\geq 40$  km
- █ Mostly natural and connected for 5 to  $< 40$  km or partly natural and connected for  $\geq 40$  km
- █ Mostly natural and connected for 1.9 to  $< 5$  km, partly natural and connected for 5 to  $< 40$  km, or developed and connected for  $\geq 40$  km
- █ Mostly natural and connected for  $< 1.9$  km, partly natural and connected for 1.9 to  $< 5$  km, or developed and connected for 5 to  $< 40$  km
- █ Partly natural and connected for  $< 1.9$  km or developed and connected for 1.9 to  $< 5$  km
- █ Developed and connected for  $< 1.9$  km
- █ Sidewalk
- █ Not identified as a trail, sidewalk, or other path

*Table 11: Indicator values for greenways & trails within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Mostly natural and connected for ≥40 km	23,805	<0.1%
	Mostly natural and connected for 5 to <40 km or partly natural and connected for ≥40 km	27,280	<0.1%
	Mostly natural and connected for 1.9 to <5 km, partly natural and connected for 5 to <40 km, or developed and connected for ≥40 km	30,428	0.1%
	Mostly natural and connected for <1.9 km, partly natural and connected for 1.9 to <5 km, or developed and connected for 5 to <40 km	14,111	<0.1%
	Partly natural and connected for <1.9 km or developed and connected for 1.9 to <5 km	7,415	<0.1%
	Developed and connected for <1.9 km	11,489	<0.1%
	Sidewalk	45,357	0.2%
	Not identified as a trail, sidewalk, or other path	27,192,162	99.4%
↓ Low	<i>Area not evaluated for this indicator</i>	8,232	<0.1%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

↑ In good condition

↓ Not in good condition

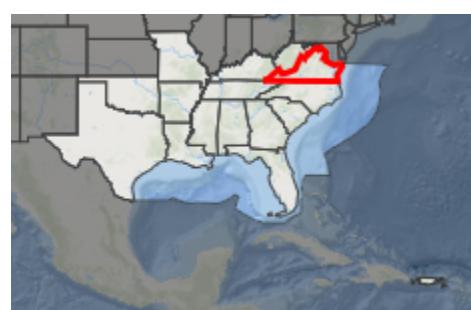
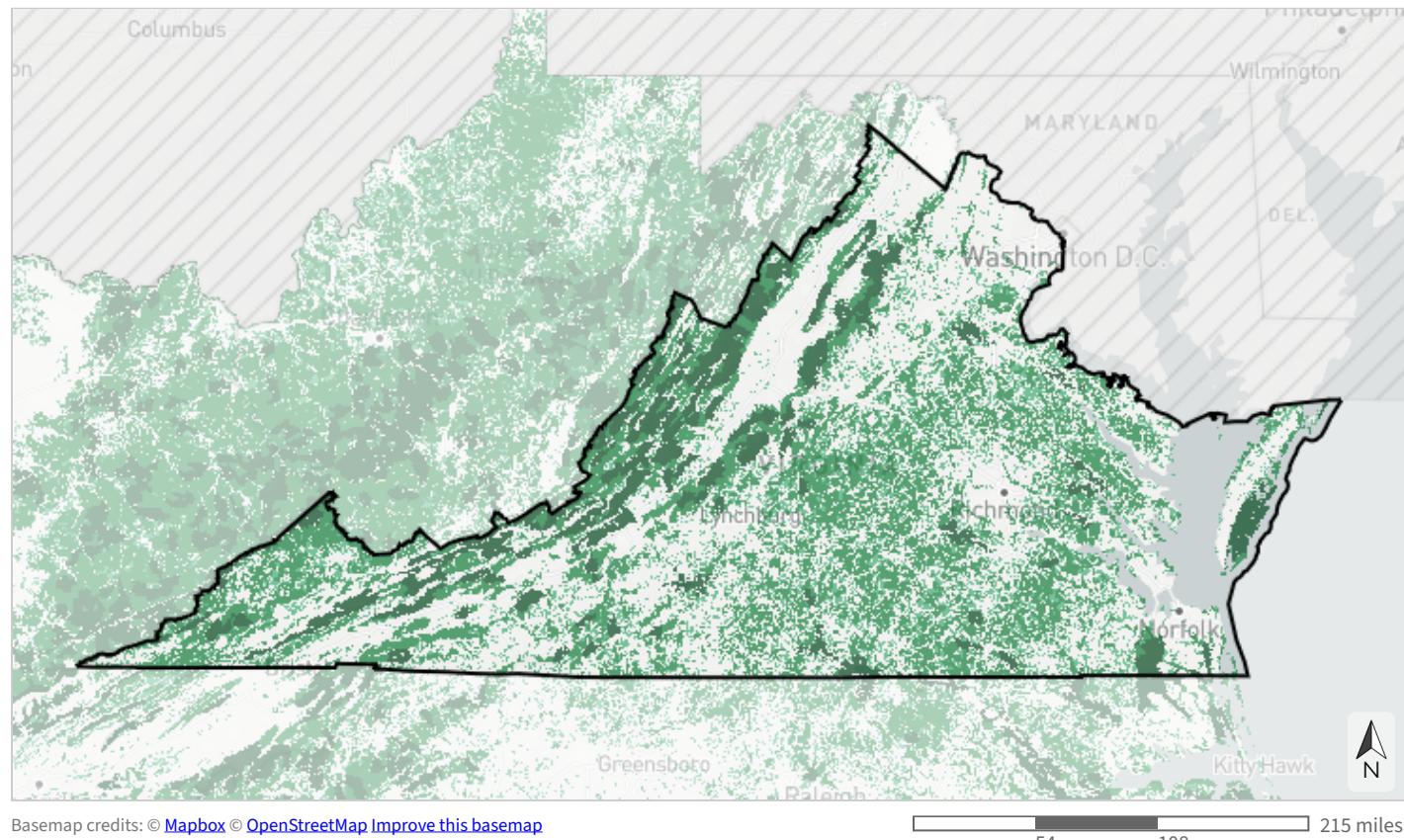
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Intact habitat cores

This indicator represents the size of large, unfragmented patches of natural habitat. It identifies minimally disturbed natural areas at least 100 acres in size and greater than 200 meters wide. Large areas of intact natural habitat are important for many wildlife species, including reptiles and amphibians, birds, and large mammals. This indicator originates from Esri's green infrastructure data.



- Large core (>10,000 acres)
- Medium core (>1,000-10,000 acres)
- Small core (>100-1,000 acres)
- Not a core

*Table 12: Indicator values for intact habitat cores within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Large core (>10,000 acres)	2,853,773	10.4%
	Medium core (>1,000-10,000 acres)	6,694,938	24.5%
	Small core (>100-1,000 acres)	3,017,498	11.0%
↓ Low	Not a core	14,793,632	54.1%
	<i>Area not evaluated for this indicator</i>	440	<0.1%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

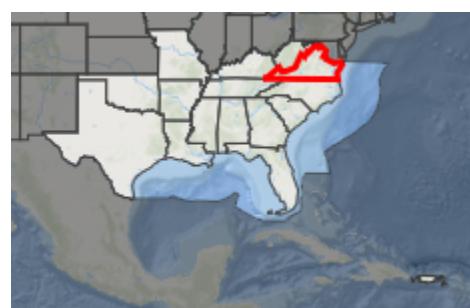
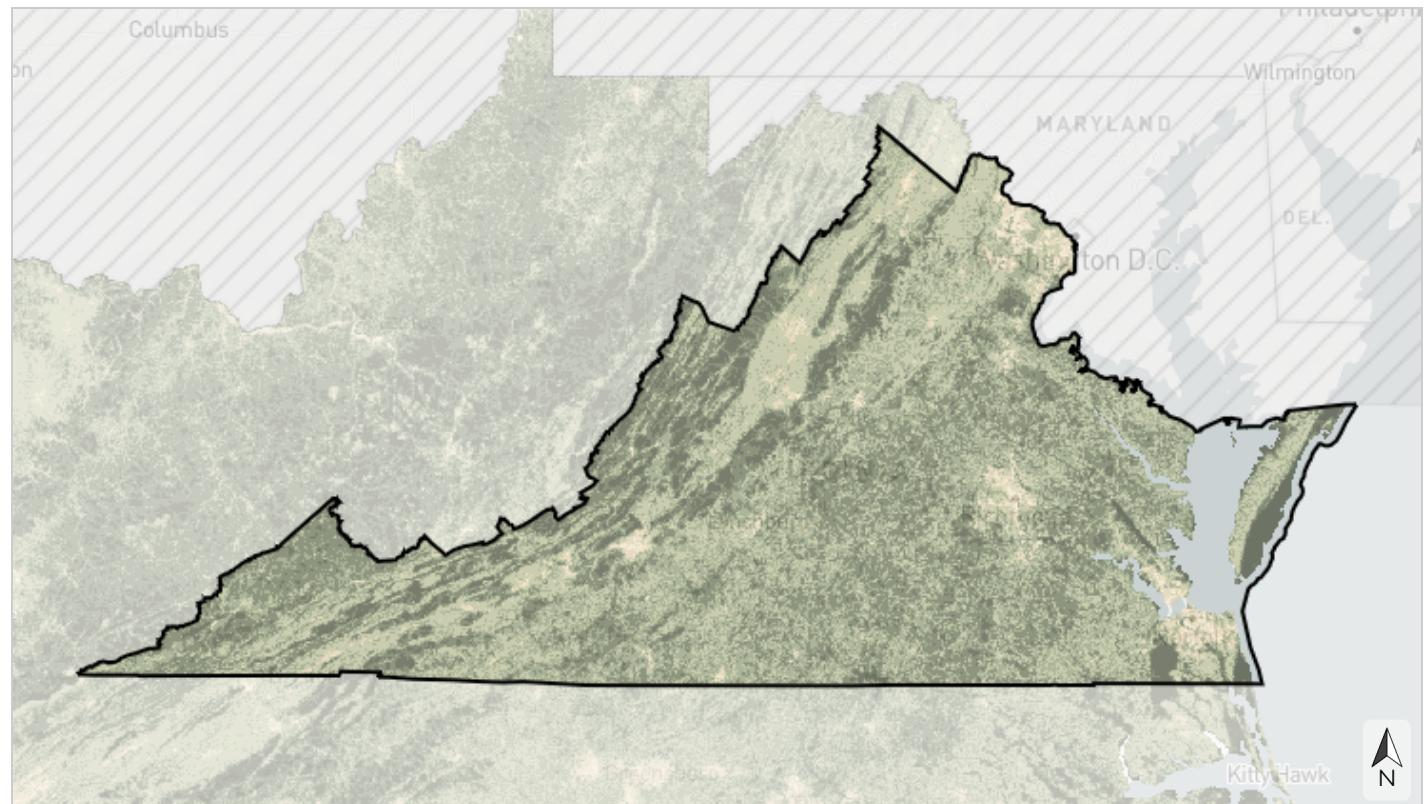
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Landscape condition

This indicator represents natural areas with limited human alteration while also considering the naturalness of the surrounding landscape. Examples of human alteration include urban development and intense agricultural use. The degree of naturalness across the landscape is a key ecological condition for sustaining species and ecosystem services that are sensitive to habitat fragmentation at multiple scales. This indicator uses the National Land Cover Dataset, various data on grasslands, mines, and quarries, and ideas from the Florida Critical Lands and Waters Identification Project's approach for evaluating landscape integrity.



- Very natural landscape
- Natural landscape
- Mostly natural landscape
- Partly natural landscape
- Altered landscape
- Heavily altered landscape

*Table 13: Indicator values for landscape condition within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High ↓ Low	Very natural landscape	2,282,151	8.3%
	Natural landscape	7,669,724	28.0%
	Mostly natural landscape	8,360,480	30.6%
	Partly natural landscape	6,610,729	24.2%
	Altered landscape	752,186	2.7%
	Heavily altered landscape	221,355	0.8%
	<i>Area not evaluated for this indicator</i>	1,463,656	5.3%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

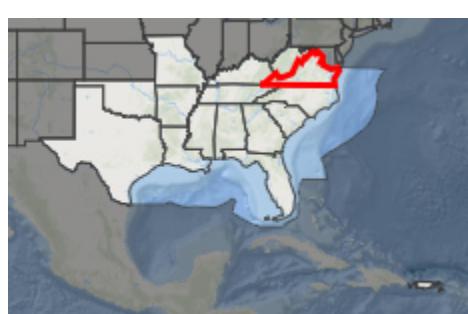
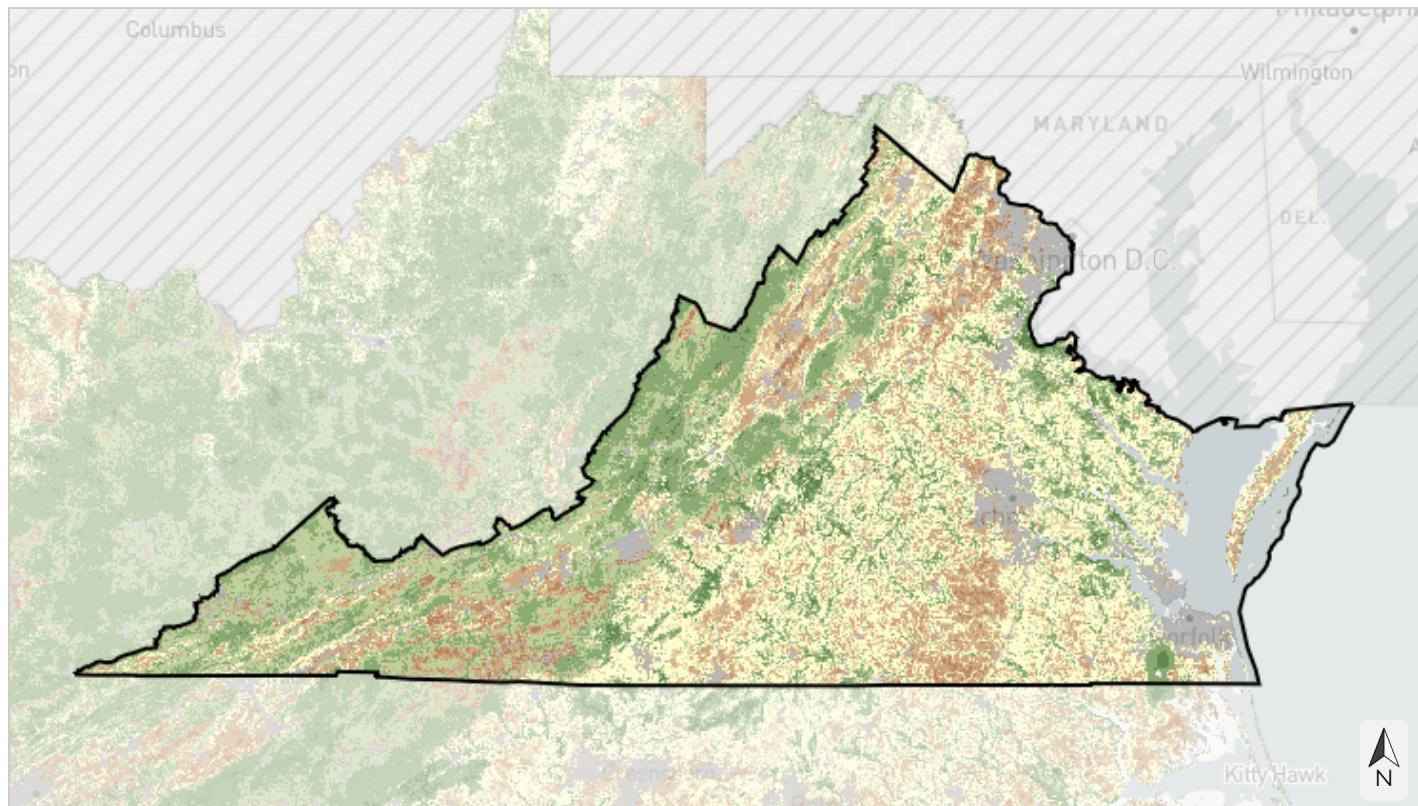
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Resilient terrestrial sites

This indicator depicts an area's capacity to maintain species diversity and ecosystem function in the face of climate change. It measures two factors that influence resilience. The first, landscape diversity, reflects the number of microhabitats and climatic gradients created by topography, elevation, and hydrology. The second, local connectedness, reflects the degree of habitat fragmentation and strength of barriers to species movement. Highly resilient sites contain many different habitat niches that support biodiversity, and allow species to move freely through the landscape to find suitable microclimates as the climate changes. This indicator originates from The Nature Conservancy's Resilient Land data.



- Most resilient
- More resilient
- Slightly more resilient
- Average/median resilience
- Slightly less resilient
- Less resilient
- Least resilient
- Developed

*Table 14: Indicator values for resilient terrestrial sites within Virginia. A good condition threshold is not yet defined for this indicator.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Most resilient	425,146	1.6%
	More resilient	4,140,228	15.1%
	Slightly more resilient	4,813,424	17.6%
	Average/median resilience	5,952,687	21.8%
	Slightly less resilient	2,788,092	10.2%
	Less resilient	2,711,616	9.9%
	Least resilient	634,428	2.3%
	Developed	3,303,975	12.1%
<i>Area not evaluated for this indicator</i>		2,590,684	9.5%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

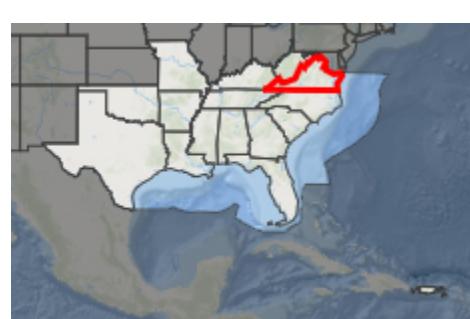
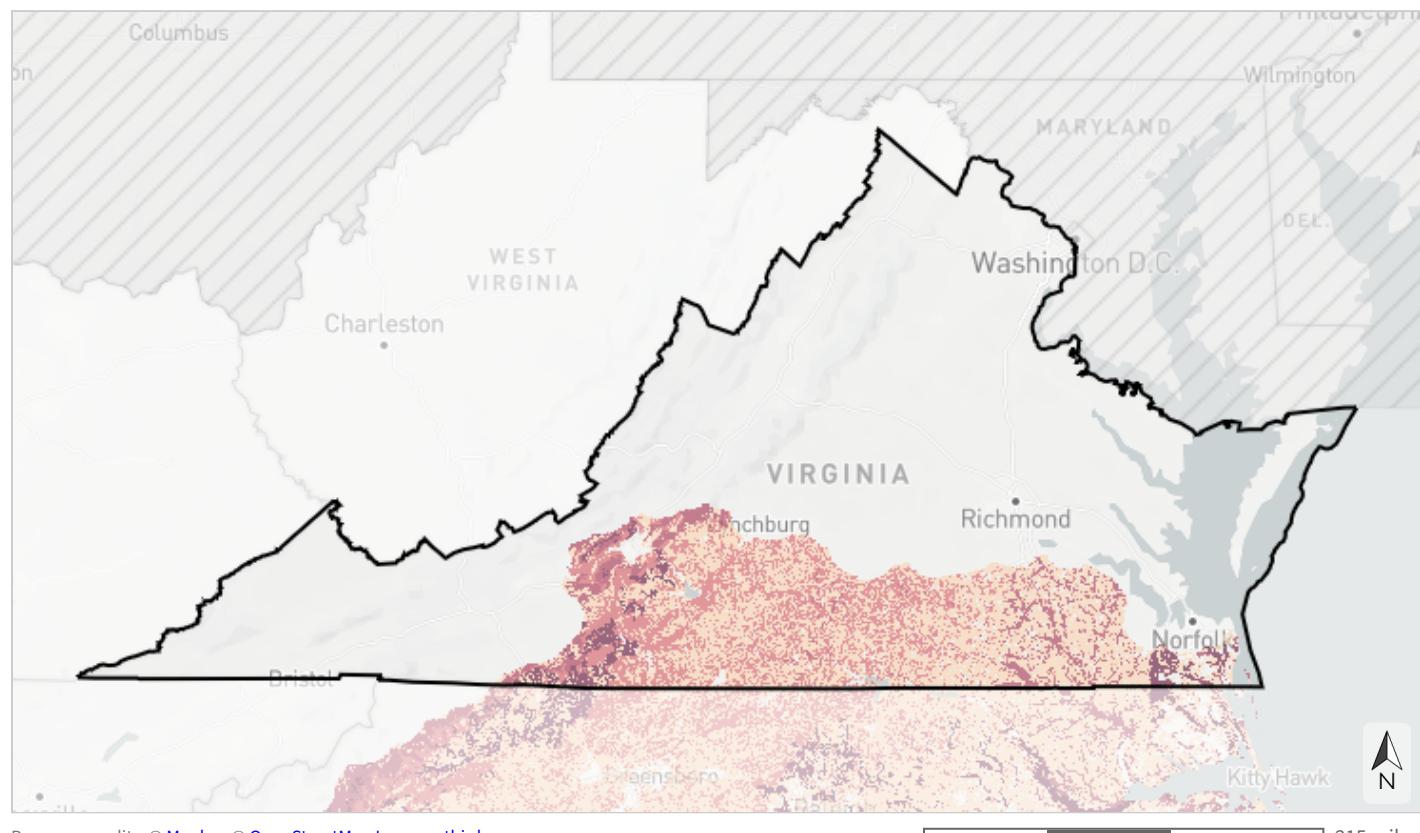
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## South Atlantic forest birds

This indicator is an index of habitat suitability for twelve upland hardwood and forested wetland bird species (wood thrush, whip-poor-will, American woodcock, red-headed woodpecker, Chuck-will's widow, hooded warbler, Kentucky warbler, Acadian flycatcher, Northern parula, black-throated green warbler, prothonotary warbler, Swainson's warbler) based on patch size and other ecosystem characteristics such as proximity to water and proximity to forest and ecotone edge. The needs of these species are increasingly restrictive at higher index values, reflecting better quality habitat. It originates from Southeast Gap Analysis Program and Designing Sustainable Landscapes bird habitat models.



### Potential for presence of forest bird index species

- Very large patches near water (potential for Swainson's warbler)
- Large patches often near water (potential for Northern parula, black-throated green warbler, or Prothonotary warbler)
- Medium patches (potential for Acadian flycatcher)
- Small patches often near water (potential for hooded warbler or Kentucky warbler)
- Very small patches or near open areas (potential for wood thrush, whip-poor-will, red-headed woodpecker, Chuck-will's widow, or American woodcock)
- Less potential

*Table 15: Indicator values for South Atlantic forest birds within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

<b>Indicator Values: Potential for presence of forest bird index species</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	Very large patches near water (potential for Swainson's warbler)	269,148	1.0%
	Large patches often near water (potential for Northern parula, black-throated green warbler, or Prothonotary warbler)	623,824	2.3%
	Medium patches (potential for Acadian flycatcher)	1,850,219	6.8%
	Small patches often near water (potential for hooded warbler or Kentucky warbler)	352,952	1.3%
	Very small patches or near open areas (potential for wood thrush, whip-poor-will, red-headed woodpecker, Chuck-will's widow, or American woodcock)	3,201,834	11.7%
	Less potential	877,465	3.2%
↓ Low	<i>Area not evaluated for this indicator</i>	20,184,839	73.8%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

↑ In good condition

↓ Not in good condition

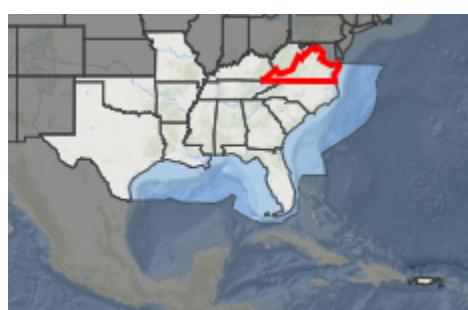
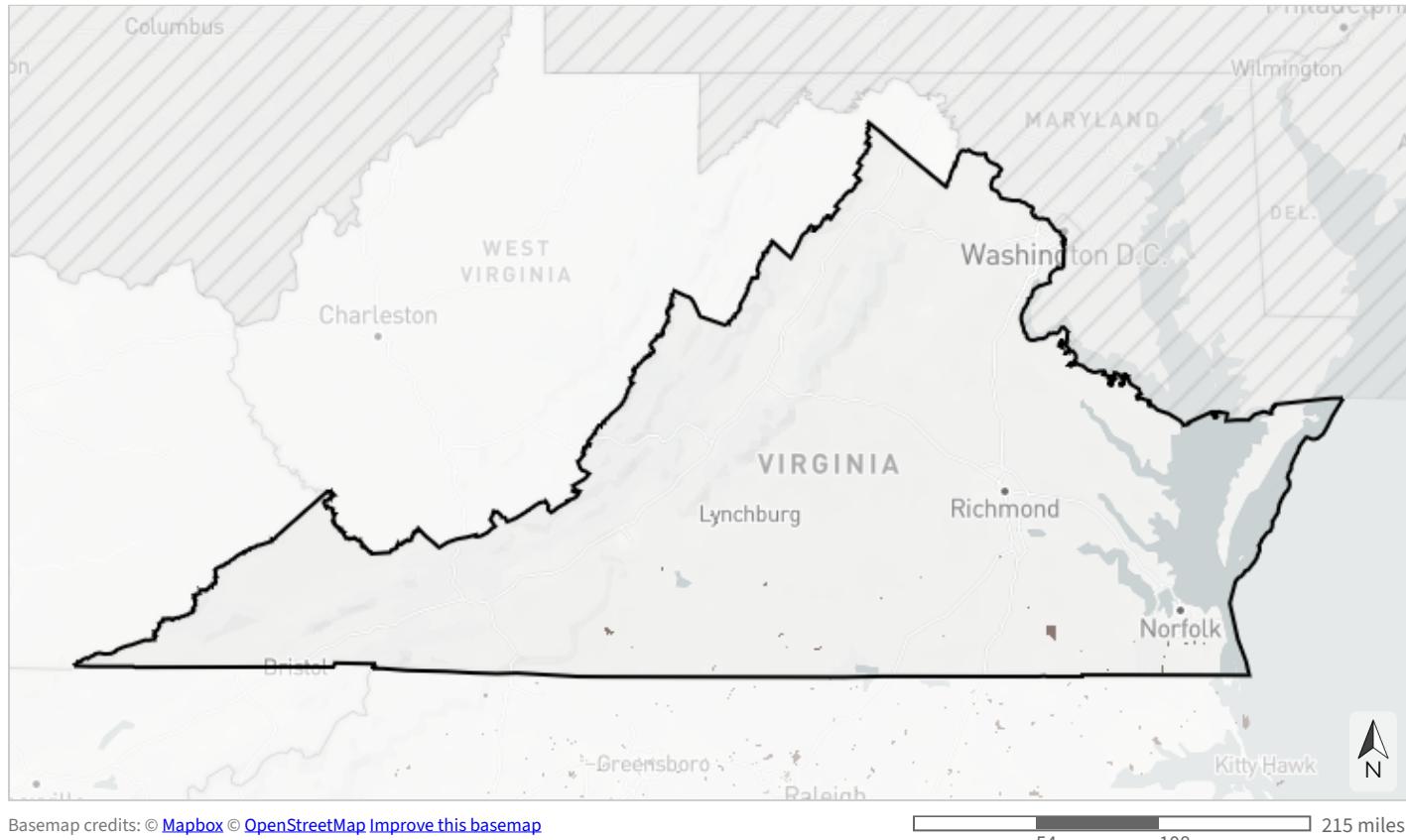
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## South Atlantic low-urban historic landscapes

This cultural resource indicator is an index of sites on the National Register of Historic Places surrounded by limited urban development. It identifies significant historic places that remain connected to their context in the natural world. It uses the National Land Cover Database and historic places data from the National Park Service and various state historic resource agencies.



- Historic place with nearby low-urban buffer
- Historic place with nearby high-urban buffer
- Not in the National Register of Historic Places

*Table 16: Indicator values for South Atlantic low-urban historic landscapes within Virginia. A good condition threshold is not yet defined for this indicator.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Historic place with nearby low-urban buffer	29,176	0.1%
	Historic place with nearby high-urban buffer	5,112	<0.1%
↓ Low	Not in the National Register of Historic Places	6,335,966	23.2%
	<i>Area not evaluated for this indicator</i>	20,990,026	76.7%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

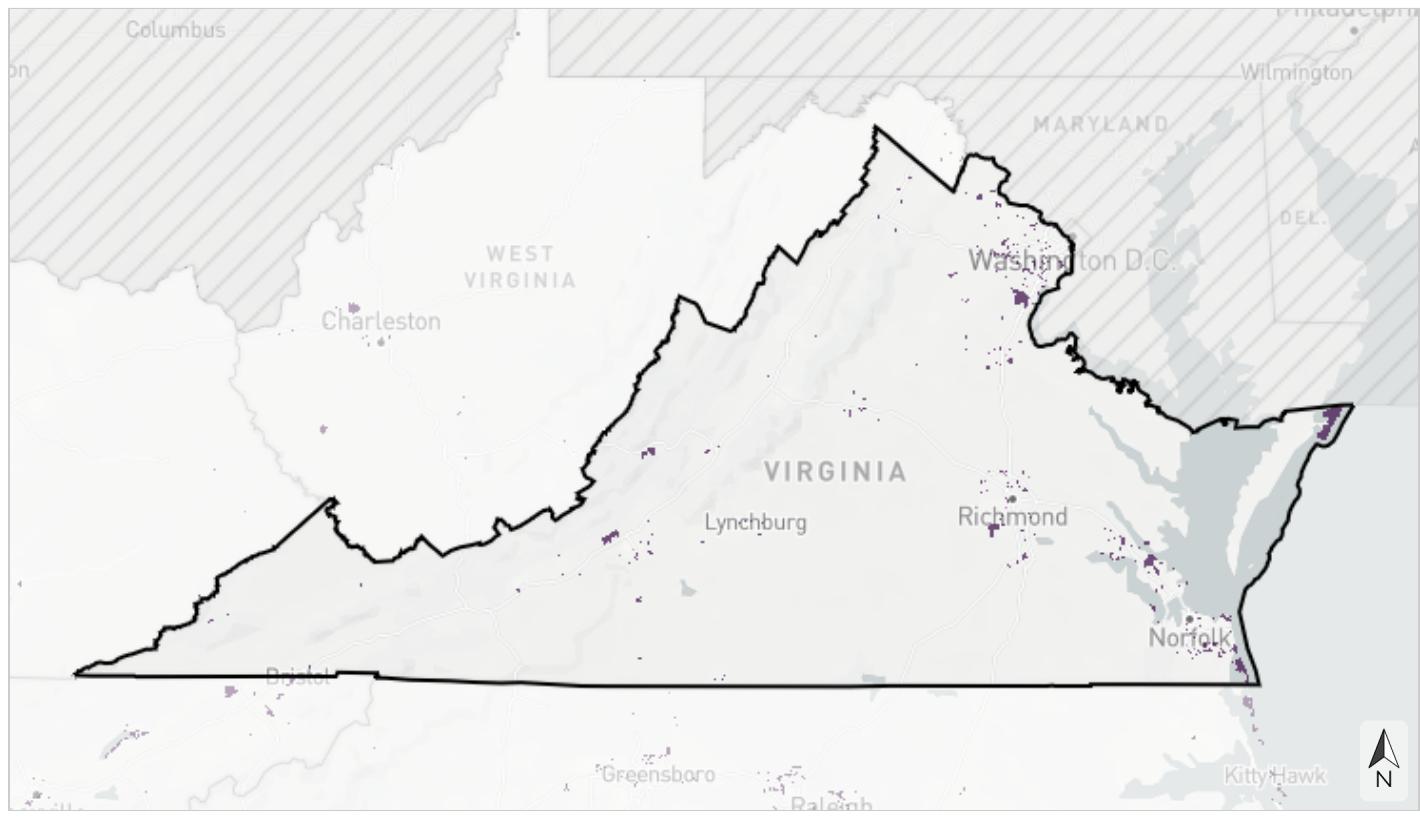
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Terrestrial

## Urban park size

This cultural resource indicator measures the size of parks larger than 5 acres in the urban environment. Protected natural areas in urban environments provide urban residents a nearby place to connect with nature, and offer refugia for some species. This indicator complements the equitable access to potential parks indicator by capturing the value of existing parks. It originates from the Protected Areas Database of the United States, Census urban areas, and the National Land Cover Database.



Basemap credits: © Mapbox © OpenStreetMap Improve this basemap

54 108 215 miles



- 75+ acre urban park
- 50 to <75 acre urban park
- 30 to <50 acre urban park
- 10 to <30 acre urban park
- 5 to <10 acre urban park
- <5 acre urban park
- Not identified as an urban park

*Table 17: Indicator values for urban park size within Virginia. A good condition threshold is not yet defined for this indicator.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	75+ acre urban park	232,419	0.8%
	50 to <75 acre urban park	8,827	<0.1%
	30 to <50 acre urban park	8,851	<0.1%
	10 to <30 acre urban park	16,055	<0.1%
	5 to <10 acre urban park	5,602	<0.1%
	<5 acre urban park	5,595	<0.1%
↓ Low	Not identified as an urban park	26,560,590	97.1%
	<i>Area not evaluated for this indicator</i>	522,343	1.9%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

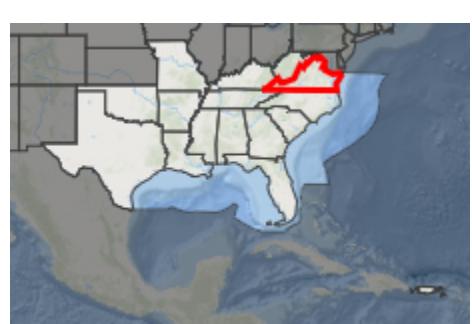
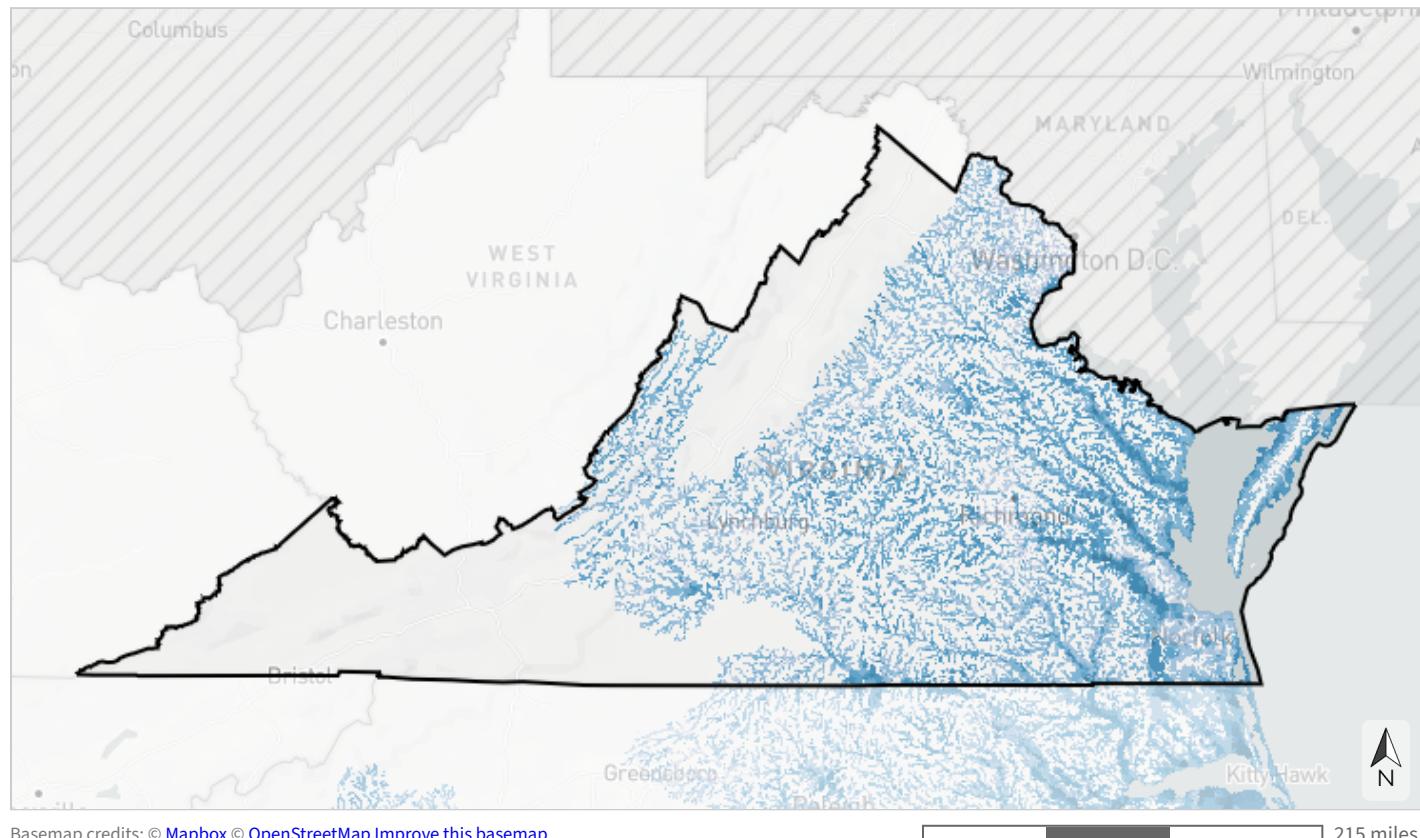
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Freshwater

## Atlantic migratory fish habitat

This indicator measures the condition of migratory fish habitat along the Atlantic coast within each catchment, using metrics of water quality, aquatic connectivity, habitat fragmentation, flow alteration, and more. Areas of excellent fish habitat are already in good condition and face few threats. Restoration opportunity areas are doing well in some respects, but restoration projects could significantly improve them. Degraded areas of opportunity face many challenges, and restoration projects are unlikely to increase available fish habitat unless particularly large in scope and scale. This indicator originates from the Atlantic Coast Fish Habitat Partnership's fish habitat conservation area mapping and prioritization project.



- Final score of 80 (areas of excellent fish habitat)
- Final score of 70 (areas of excellent fish habitat)
- Final score of 60 (restoration opportunity areas)
- Final score of 50 (restoration opportunity areas)
- Final score of 40 (restoration opportunity areas)
- Final score of 30 (restoration opportunity areas)
- Final score of 20 (restoration opportunity areas)
- Final score of 10 (degraded areas of opportunity)
- Final score of 0 (degraded areas of opportunity)

*Table 18: Indicator values for Atlantic migratory fish habitat within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
Final score of 80 (areas of excellent fish habitat)	161	<0.1%
Final score of 70 (areas of excellent fish habitat)	45,112	0.2%
Final score of 60 (restoration opportunity areas)	402,213	1.5%
Final score of 50 (restoration opportunity areas)	395,394	1.4%
Final score of 40 (restoration opportunity areas)	519,112	1.9%
Final score of 30 (restoration opportunity areas)	432,586	1.6%
Final score of 20 (restoration opportunity areas)	125,030	0.5%
Final score of 10 (degraded areas of opportunity)	21,036	<0.1%
Final score of 0 (degraded areas of opportunity)	965	<0.1%
<i>Area not evaluated for this indicator</i>	25,418,671	92.9%
<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

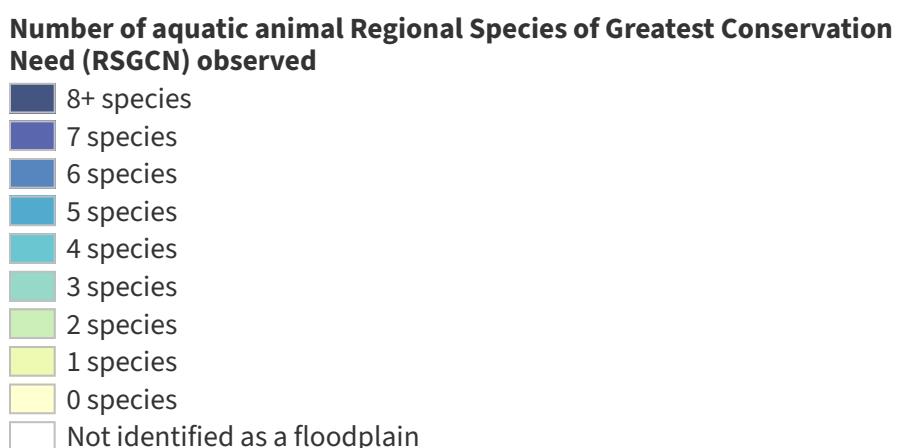
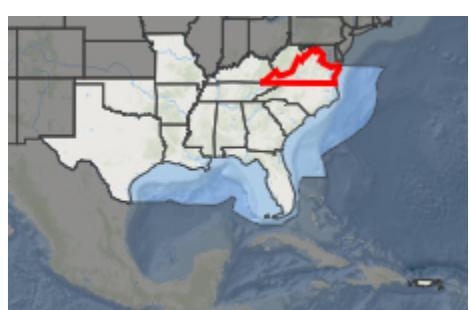
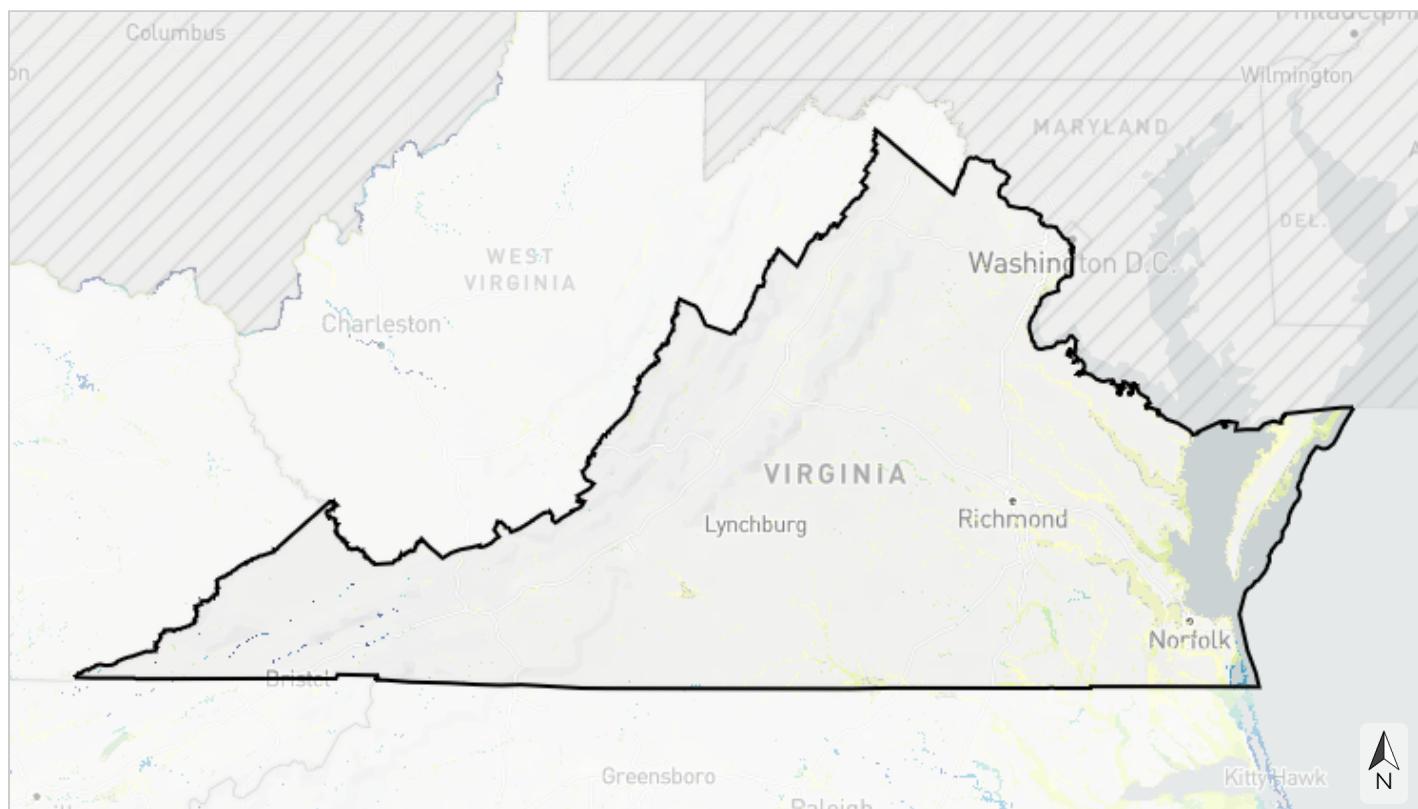
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Freshwater

## Imperiled aquatic species

This indicator measures the number of aquatic animal Regional Species of Greatest Conservation Need (RSGCN) observed within each 12-digit HUC subwatershed, including fish, mussels, snails, crayfish, and amphibians. RSGCN are regional priority species derived from the list of SGCN identified in Southeast State Wildlife Action Plans as most in need of need of conservation action. RSGCN were chosen based on consistent criteria, such as level of conservation concern, regional stewardship responsibility, and ecological significance. This indicator originates from state Natural Heritage Program data collected by the Southeast Aquatic Resources Partnership and applies to the Environmental Protection Agency's estimated floodplain, which spatially defines areas estimated to be inundated by a 100-year flood (also known as the 1% annual chance flood).



*Table 19: Indicator values for imperiled aquatic species within Virginia. A good condition threshold is not yet defined for this indicator.*

<b>Indicator Values: Number of aquatic animal Regional Species of Greatest Conservation Need (RSGCN) observed</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	8+ species	19,809	<0.1%
	7 species	8,448	<0.1%
	6 species	5,940	<0.1%
	5 species	13,411	<0.1%
	4 species	13,690	<0.1%
	3 species	21,477	<0.1%
	2 species	86,635	0.3%
	1 species	413,851	1.5%
	0 species	1,773,113	6.5%
	Not identified as a floodplain	23,551,136	86.1%
<i>Area not evaluated for this indicator</i>		1,452,770	5.3%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

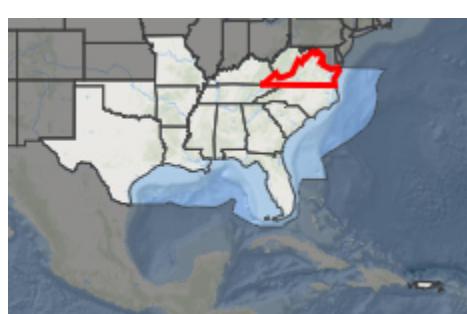
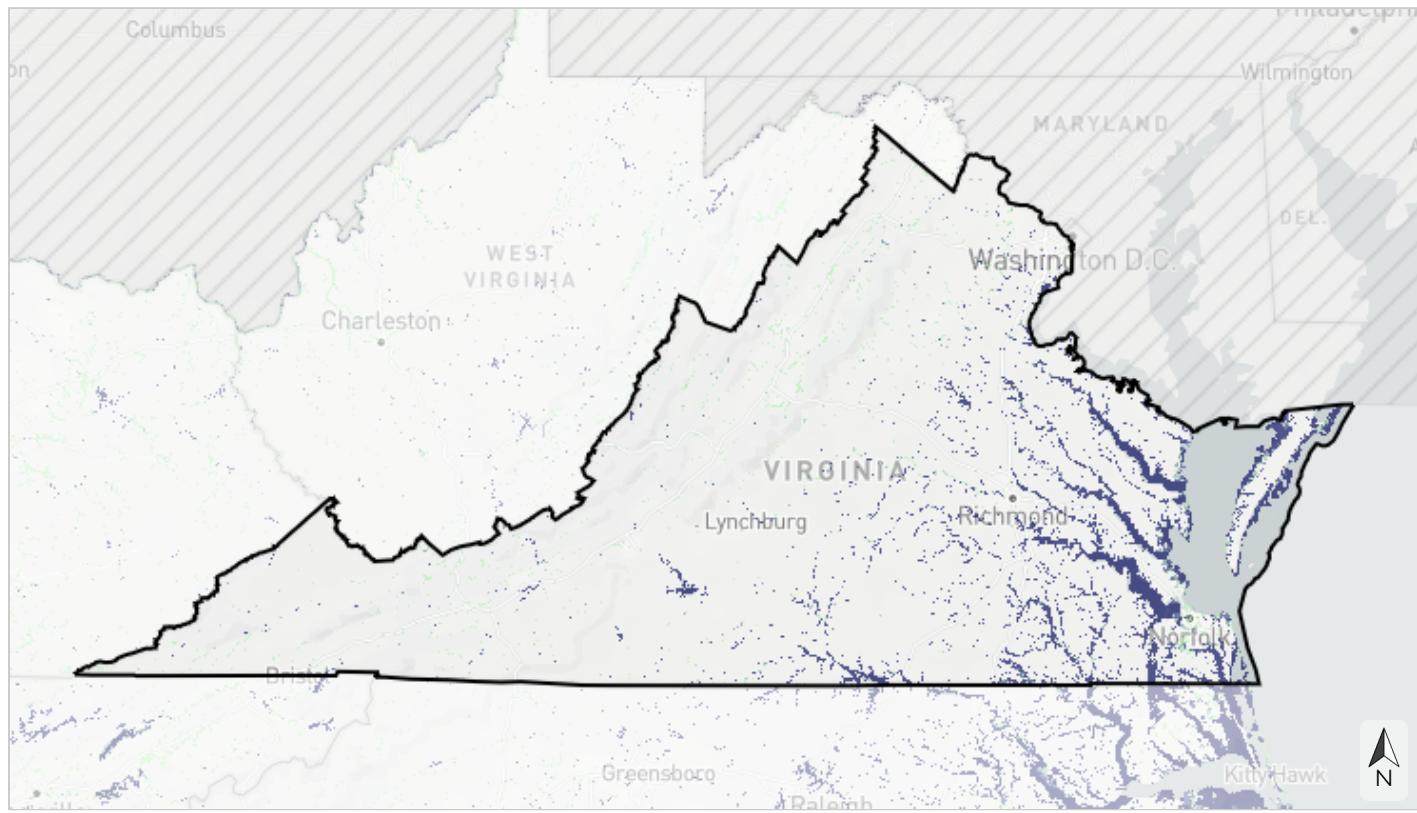
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Freshwater

## Natural landcover in floodplains

This indicator measures the amount of natural landcover in the estimated floodplain of rivers and streams within each catchment. It assesses the stream channel and its surrounding riparian buffer, measuring the percent of unaltered habitat like forests, wetlands, or open water (rather than agriculture or development). Intact vegetated buffers within the floodplain of rivers and streams provide aquatic habitat, improve water quality, reduce erosion and flooding, recharge groundwater, and more. This indicator originates from the National Land Cover Database and applies to the Environmental Protection Agency's estimated floodplain, which spatially defines areas estimated to be inundated by a 100-year flood (also known as the 1% annual chance flood).



### Percent natural landcover within the estimated floodplain, by catchment

- >90% natural landcover
- >80-90% natural landcover
- >70-80% natural landcover
- >60-70% natural landcover
- ≤60% natural landcover
- Not identified as a floodplain

Table 20: Indicator values for natural landcover in floodplains within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

<b>Indicator Values: Percent natural landcover within the estimated floodplain, by catchment</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	>90% natural landcover	1,460,205	5.3%
	>80-90% natural landcover	206,709	0.8%
	>70-80% natural landcover	129,429	0.5%
	>60-70% natural landcover	108,062	0.4%
	≤60% natural landcover	451,969	1.7%
	Not identified as a floodplain	23,551,462	86.1%
↓ Low	<i>Area not evaluated for this indicator</i>	1,452,444	5.3%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

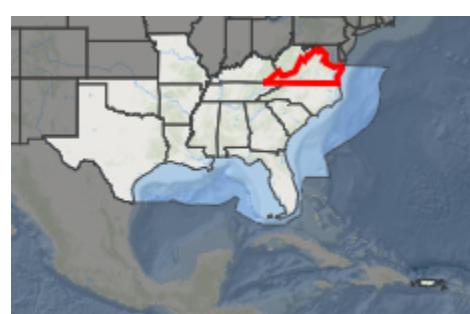
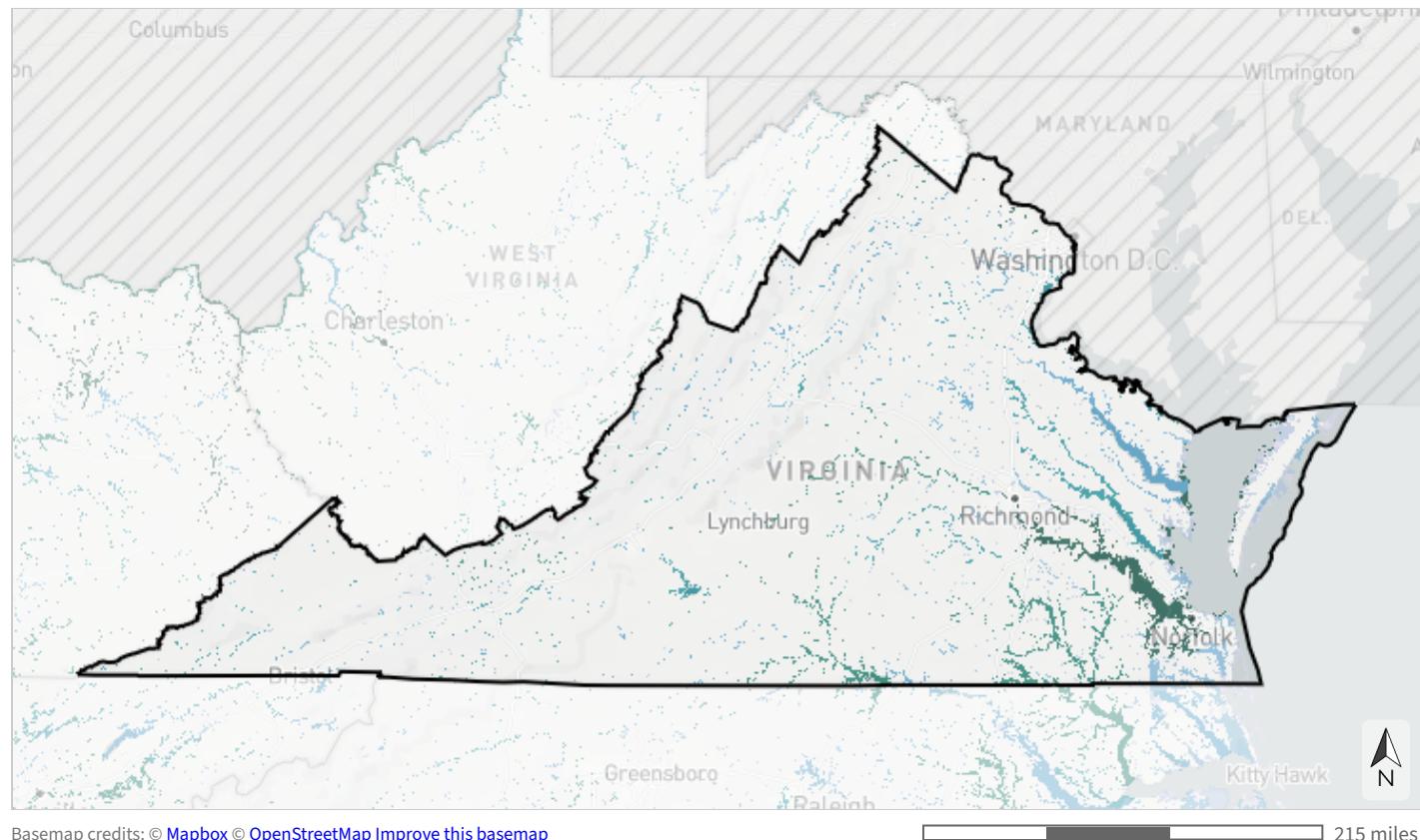
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Freshwater

## Network complexity

This indicator depicts the number of connected stream size classes in a river network between dams or waterfalls. River networks with a variety of connected stream classes help retain aquatic biodiversity in a changing climate by allowing species to access climate refugia and move between habitats. This indicator originates from the Southeast Aquatic Resources Partnership and applies to the Environmental Protection Agency's estimated floodplain, which spatially defines areas estimated to be inundated by a 100-year flood (also known as the 1% annual chance flood).



### Number of connected stream size classes

- 7 size classes
- 6 size classes
- 5 size classes
- 4 size classes
- 3 size classes
- 2 size classes
- 1 size class
- Not identified as a floodplain

*Table 21: Indicator values for network complexity within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values: Number of connected stream size classes</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	7 size classes	316,444	1.2%
	6 size classes	413,684	1.5%
	5 size classes	429,867	1.6%
	4 size classes	482,245	1.8%
	3 size classes	285,835	1.0%
	2 size classes	297,659	1.1%
	1 size class	123,412	0.5%
	Not identified as a floodplain	23,551,745	86.1%
↓ Low	<i>Area not evaluated for this indicator</i>	1,459,389	5.3%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

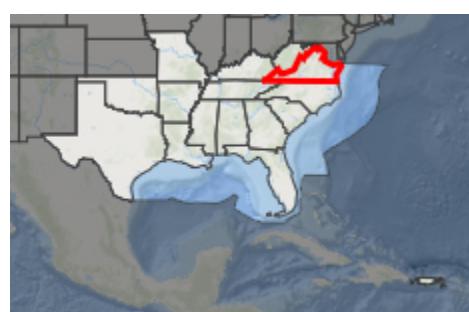
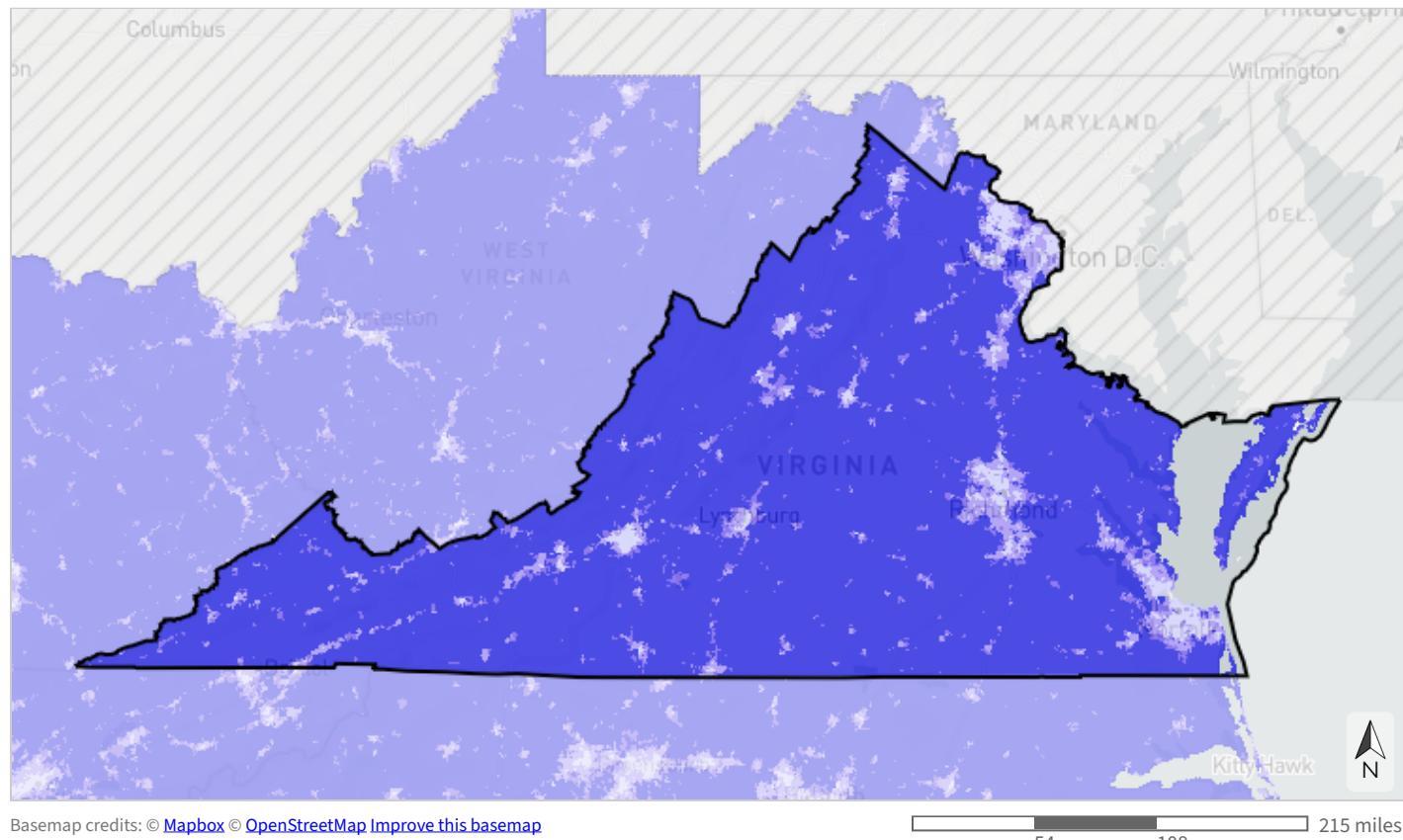
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Freshwater

## Permeable surface

This indicator measures the average percent of non-impervious cover within each catchment. High levels of impervious surface degrade water quality and alter freshwater flow, impacting both aquatic species communities and ecosystem services for people, like the availability of clean drinking water. This indicator originates from the National Land Cover Database.



### Percent of catchment permeable

- >95% permeable (likely high water quality and supporting most sensitive aquatic species)
- >90-95% permeable (likely declining water quality and supporting most aquatic species)
- >70-90% permeable (likely degraded water quality and not supporting many aquatic species)
- ≤70% permeable (likely degraded instream flow, water quality, and aquatic species communities)

Table 22: Indicator values for permeable surface within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	<b>Indicator Values: Percent of catchment permeable</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	>95% permeable (likely high water quality and supporting most sensitive aquatic species)	23,070,133	84.3%
			↑ In good condition
	>90-95% permeable (likely declining water quality and supporting most aquatic species)	1,024,614	3.7%
			↓ Not in good condition
	>70-90% permeable (likely degraded water quality and not supporting many aquatic species)	1,243,303	4.5%
↓ Low	≤70% permeable (likely degraded instream flow, water quality, and aquatic species communities)	569,461	2.1%
	<i>Area not evaluated for this indicator</i>	1,452,770	5.3%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

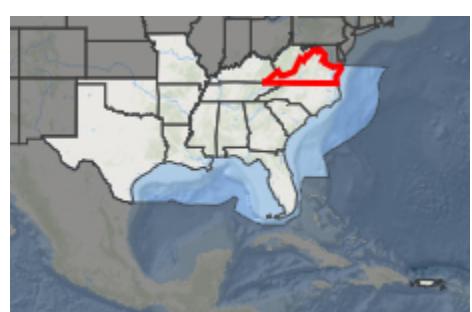
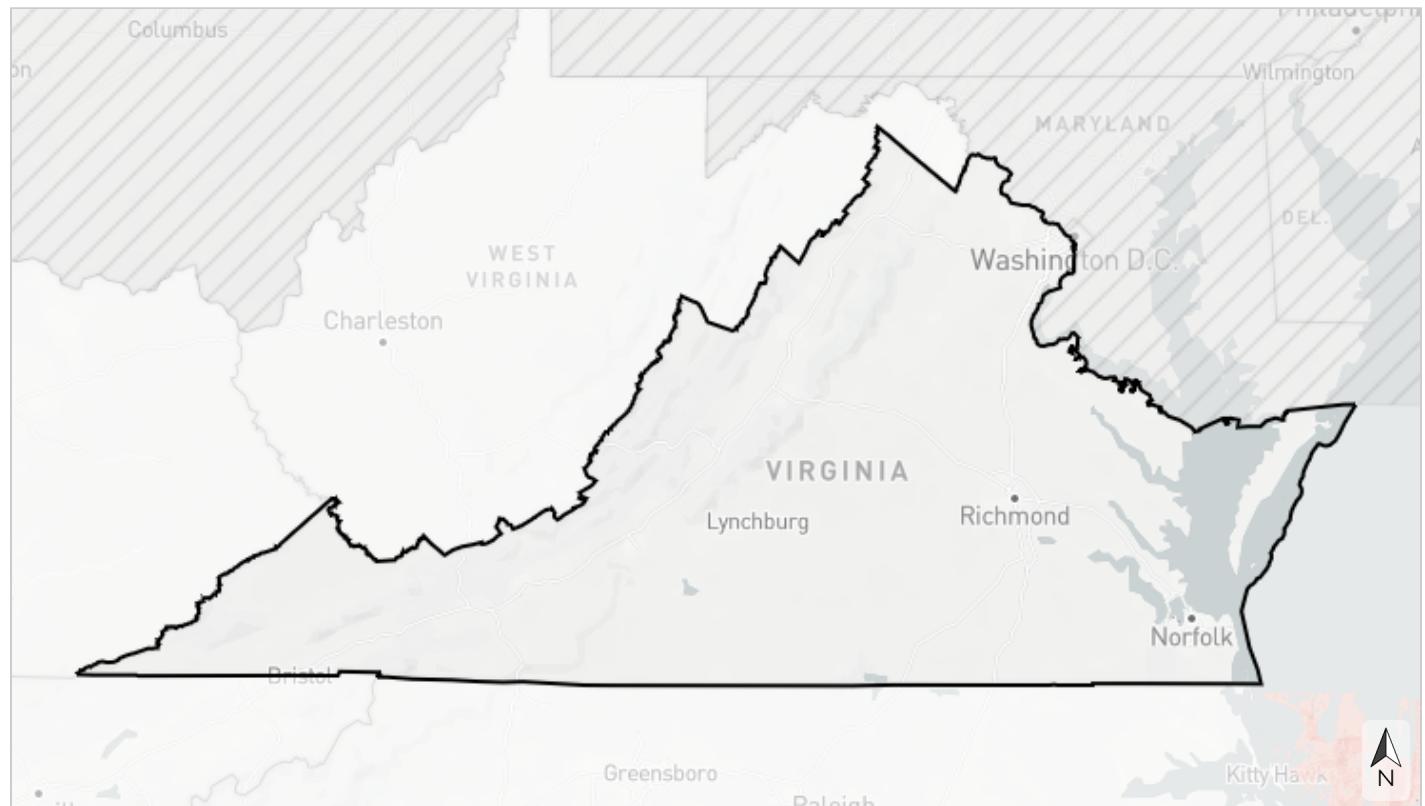
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Atlantic coral & hardbottom

This indicator predicts the presence of coral and hardbottom in the Atlantic Ocean based on direct observations, distribution models, and known locations of artificial reefs and shipwrecks. The models use hardbottom observations and a suite of environmental predictors including measures of depth, seafloor topography and substrate, oceanography, and geography. Hardbottom provides an anchor for important seafloor habitats such as deep-sea corals, plants, and sponges, providing valuable structure that supports a wide range of invertebrate and fish species. This indicator combines data from multiple sources, including The Nature Conservancy's South Atlantic Bight Marine Assessment, several National Oceanic and Atmospheric Administration datasets, Florida state data, and more.



- Confirmed hardbottom-associated species (corals, sponges)
- Confirmed natural hardbottom
- Artificial reefs
- Shipwrecks
- Predicted cold-water coral mounds (Blake Plateau)
- Highest probability of hardbottom (>80th percentile)
- High probability of hardbottom (>60th-80th percentile)
- Medium probability of hardbottom (>40th-60th percentile)
- Not identified as hardbottom

*Table 23: Indicator values for Atlantic coral & hardbottom within Virginia. A good condition threshold is not yet defined for this indicator.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Confirmed hardbottom-associated species (corals, sponges)	297	<0.1%
	Confirmed natural hardbottom	0	0%
	Artificial reefs	333	<0.1%
	Shipwrecks	5,093	<0.1%
	Predicted cold-water coral mounds (Blake Plateau)	0	0%
	Highest probability of hardbottom (>80th percentile)	0	0%
	High probability of hardbottom (>60th-80th percentile)	0	0%
	Medium probability of hardbottom (>40th-60th percentile)	0	0%
↓ Low	Not identified as hardbottom	2,335,053	8.5%
	<i>Area not evaluated for this indicator</i>	25,019,504	91.4%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

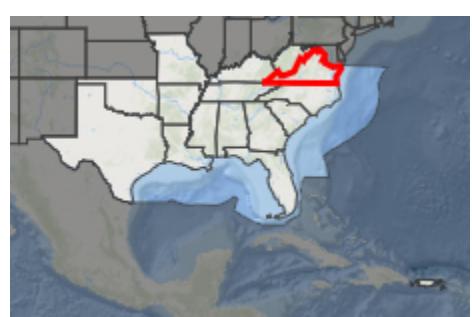
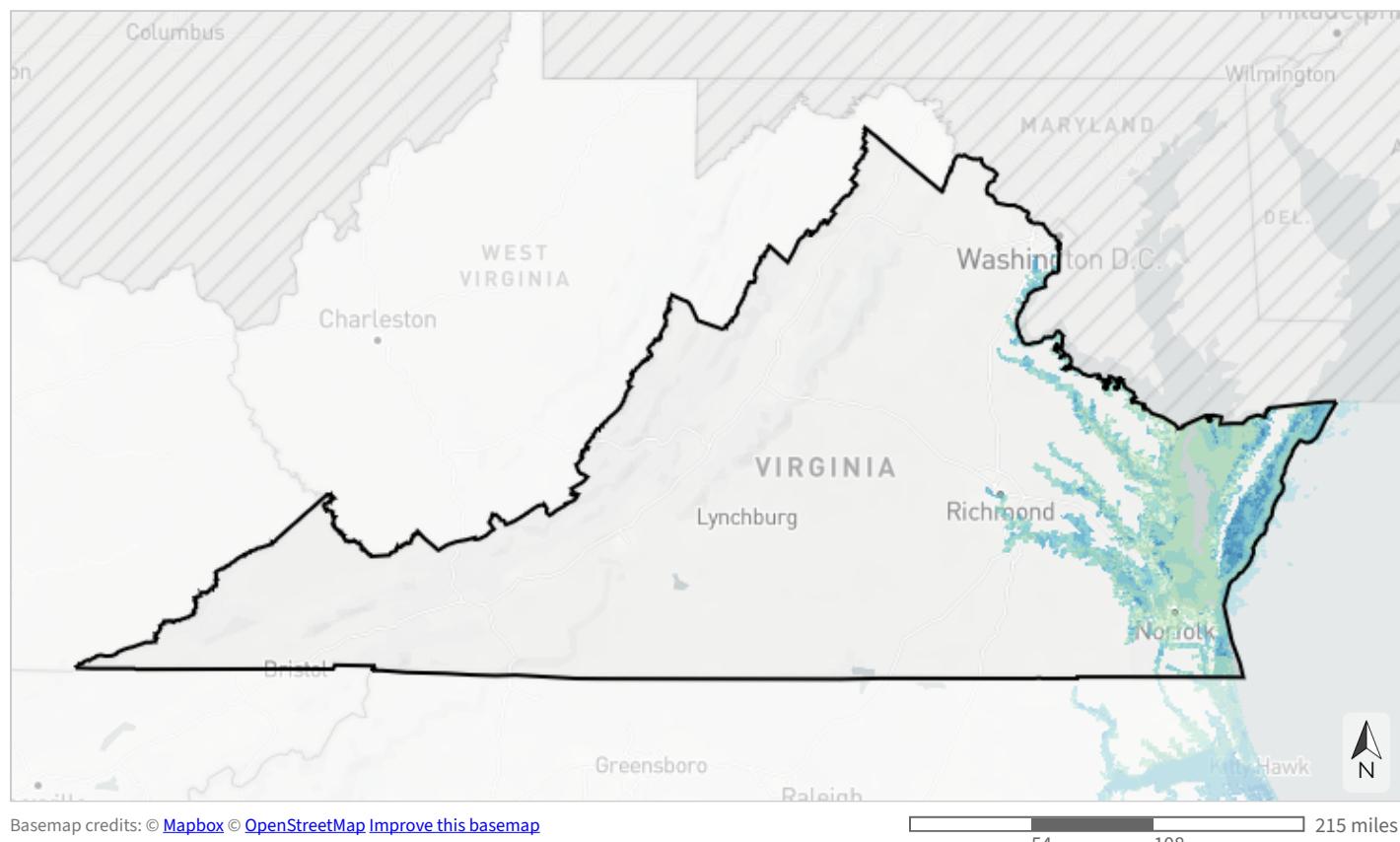
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Atlantic estuarine fish habitat

This indicator measures the condition of estuarine fish habitat along the Atlantic coast using metrics of water quality, marsh edges, seagrass and oyster reefs, fragmentation, human development, and more. Areas of excellent fish habitat are already in good condition and face few threats. Restoration opportunity areas are doing well in some respects, but restoration projects could significantly improve them. Degraded areas of opportunity face many challenges, and restoration projects are unlikely to increase available fish habitat unless particularly large in scope and scale. This indicator originates from the Atlantic Coast Fish Habitat Partnership's fish habitat conservation area mapping and prioritization project.



- Final score of 80 (areas of excellent fish habitat)
- Final score of 70 (areas of excellent fish habitat)
- Final score of 60 (restoration opportunity areas)
- Final score of 50 (restoration opportunity areas)
- Final score of 40 (restoration opportunity areas)
- Final score of 30 (restoration opportunity areas)
- Final score of 20 (restoration opportunity areas)
- Final score of 10 (degraded areas of opportunity)
- Final score of 0 (degraded areas of opportunity)

Table 24: Indicator values for Atlantic estuarine fish habitat within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
Final score of 80 (areas of excellent fish habitat)	0	0%
Final score of 70 (areas of excellent fish habitat)	13,095	<0.1%
Final score of 60 (restoration opportunity areas)	108,958	0.4%
Final score of 50 (restoration opportunity areas)	199,330	0.7%
Final score of 40 (restoration opportunity areas)	535,491	2.0%
Final score of 30 (restoration opportunity areas)	914,308	3.3%
Final score of 20 (restoration opportunity areas)	781,518	2.9%
Final score of 10 (degraded areas of opportunity)	175,580	0.6%
Final score of 0 (degraded areas of opportunity)	42,011	0.2%
<i>Area not evaluated for this indicator</i>	24,589,988	89.9%
<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

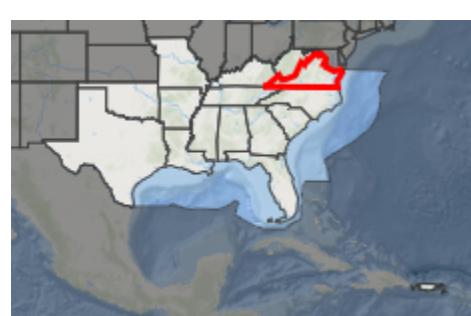
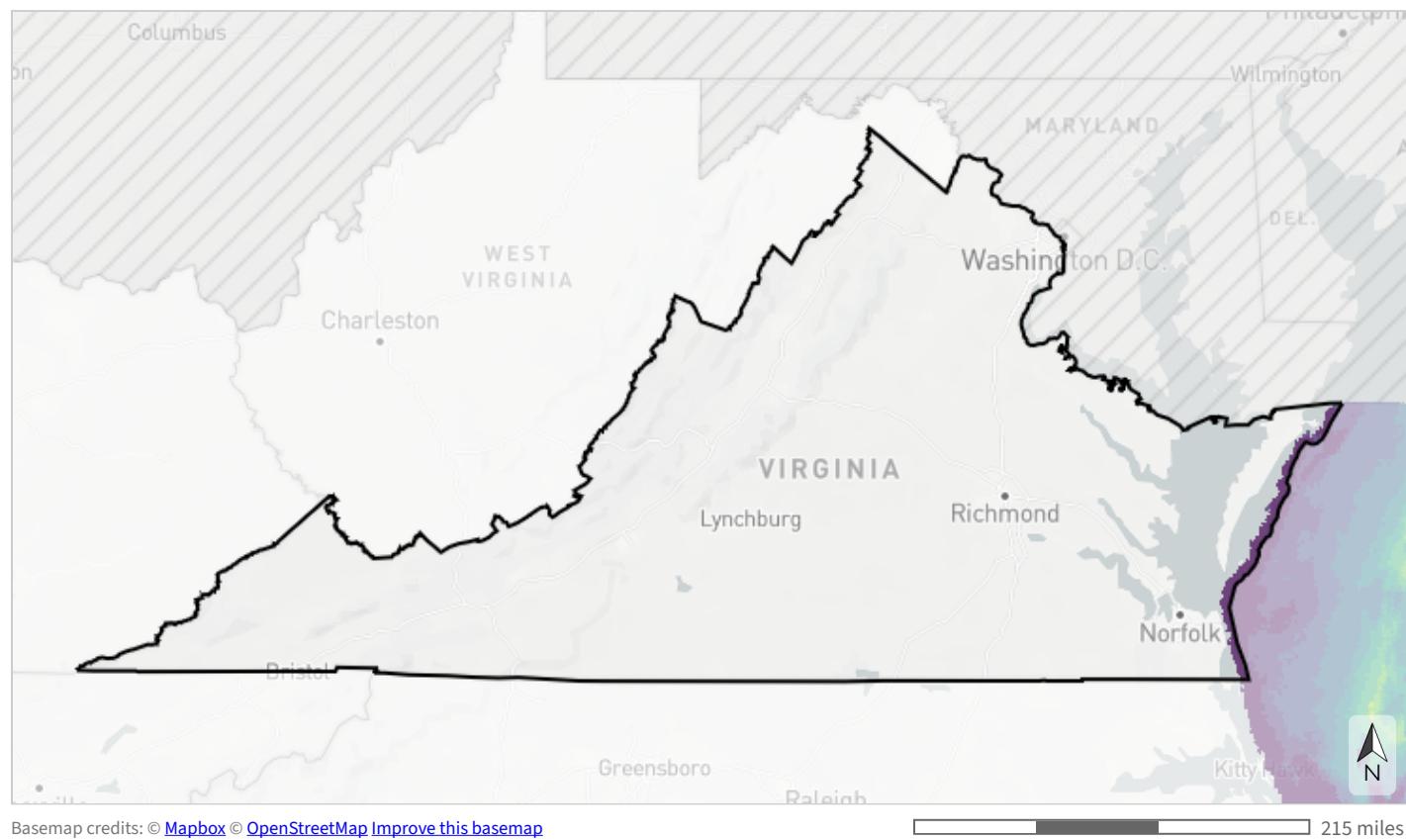
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Atlantic marine birds

This indicator identifies important areas in the Atlantic Ocean for birds that feed exclusively or mainly at sea. It uses seasonal predictions of relative abundance for 19 species of marine birds (Audubon's shearwater, band-rumped storm petrel, black-capped petrel, black scoter, Bonaparte's gull, bridled tern, brown pelican, common loon, common tern, Cory's shearwater, great shearwater, Manx shearwater, Northern gannet, parasitic jaeger, red-throated loon, royal tern, sooty shearwater, sooty tern, white-winged scoter) based on sightings from boat-based surveys and marine environmental data like fronts, primary productivity, and ocean currents. This indicator originates from Duke University's Marine-life Data and Analysis Team marine bird models.



### Percentile of importance for marine bird index species (across the full East Coast study area)

- >90th percentile
- >80th-90th percentile
- >70th-80th percentile
- >60th-70th percentile
- >50th-60th percentile
- >40th-50th percentile
- >30th-40th percentile
- >20th-30th percentile
- >10th-20th percentile
- ≤10th percentile
- Land

*Table 25: Indicator values for Atlantic marine birds within Virginia. A good condition threshold is not yet defined for this indicator.*

<b>Indicator Values: Percentile of importance for marine bird index species (across the full East Coast study area)</b>		<b>Acres</b>	<b>Percent of Area</b>
↑ High	>90th percentile	215,050	0.8%
	>80th-90th percentile	16,543	<0.1%
	>70th-80th percentile	0	0%
	>60th-70th percentile	0	0%
	>50th-60th percentile	0	0%
	>40th-50th percentile	0	0%
	>30th-40th percentile	0	0%
	>20th-30th percentile	0	0%
	>10th-20th percentile	0	0%
	≤10th percentile	0	0%
↓ Low	Land	1,079	<0.1%
	<i>Area not evaluated for this indicator</i>	27,127,608	99.1%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

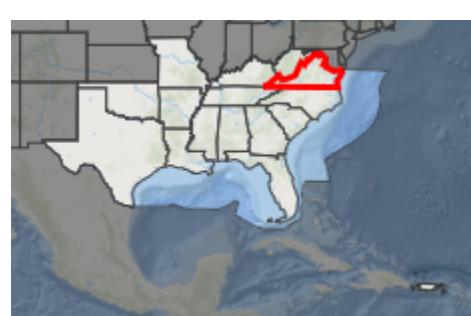
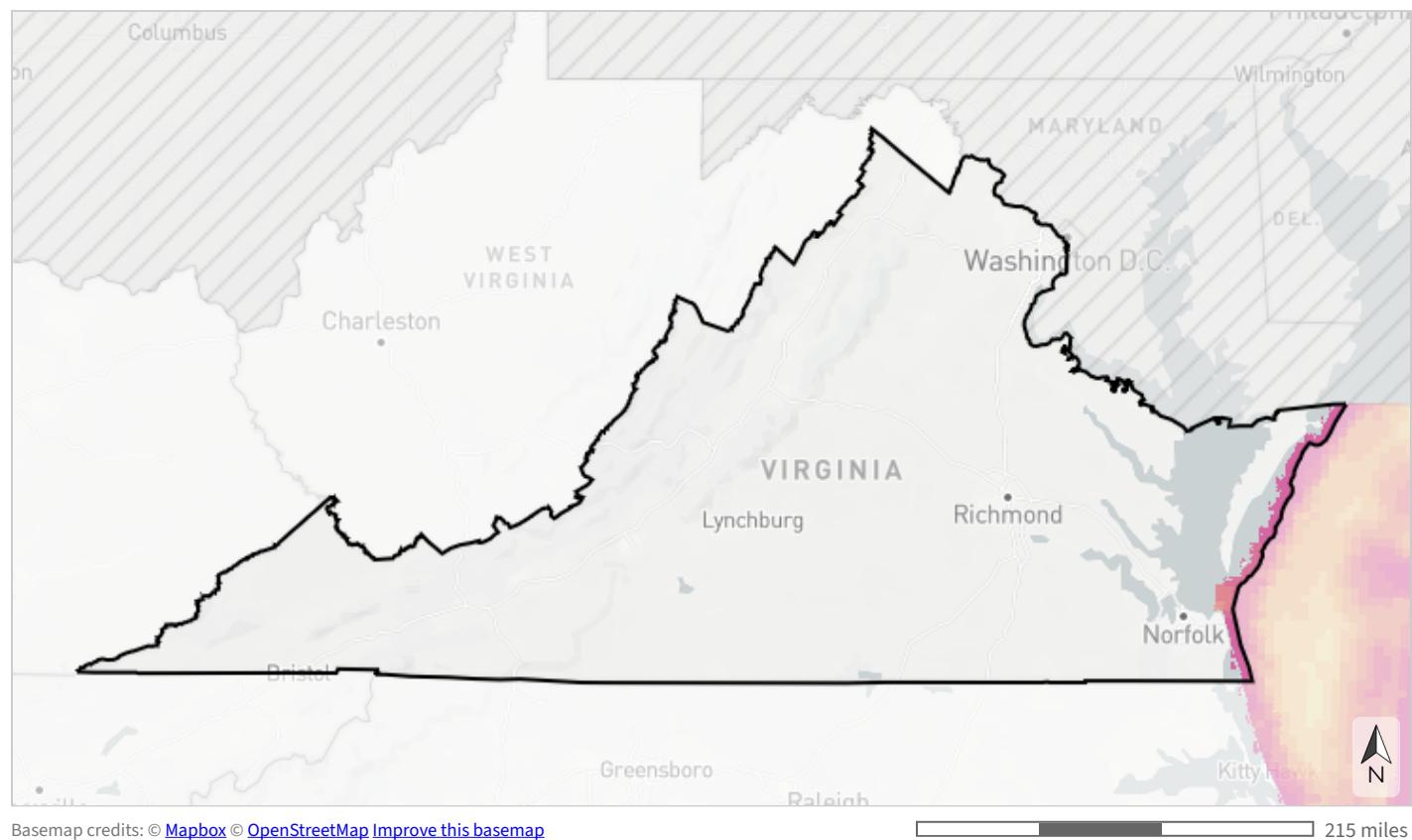
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Atlantic marine mammals

This indicator identifies important areas in the Atlantic Ocean for dolphins, whales, and seals. It incorporates density predictions for 20 marine mammal species or species groups (Atlantic spotted dolphin, Atlantic white-sided dolphin, Clymene dolphin, common bottlenose dolphin, Cuvier's beaked whale, dwarf and pygmy sperm whales, fin whale, harbor porpoise, humpback whale, mesoplodont beaked whales, North Atlantic right whale, pantropical spotted dolphin, pilot whales, Risso's dolphin, rough-toothed dolphin, seals, short-beaked common dolphin, sperm whale, striped dolphin, unidentified beaked whales) based on sightings from boat-based and aerial surveys and data on oceanographic conditions. It uses marine mammal models developed by the Duke Marine Lab.



### Percentile of importance for marine mammal index species (across the full East Coast study area)

- >90th percentile
- >80th-90th percentile
- >70th-80th percentile
- >60th-70th percentile
- >50th-60th percentile
- >40th-50th percentile
- >30th-40th percentile
- >20th-30th percentile
- >10th-20th percentile
- ≤10th percentile
- Land

Table 26: Indicator values for Atlantic marine mammals within Virginia. A good condition threshold is not yet defined for this indicator.

	<b>Indicator Values: Percentile of importance for marine mammal index species (across the full East Coast study area)</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	>90th percentile	205,848	0.8%
	>80th-90th percentile	64,976	0.2%
	>70th-80th percentile	33,948	0.1%
	>60th-70th percentile	6,152	<0.1%
	>50th-60th percentile	0	0%
	>40th-50th percentile	0	0%
	>30th-40th percentile	0	0%
	>20th-30th percentile	0	0%
	>10th-20th percentile	0	0%
	≤10th percentile	0	0%
↓ Low	Land	30,210	0.1%
	<i>Area not evaluated for this indicator</i>	27,019,146	98.8%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

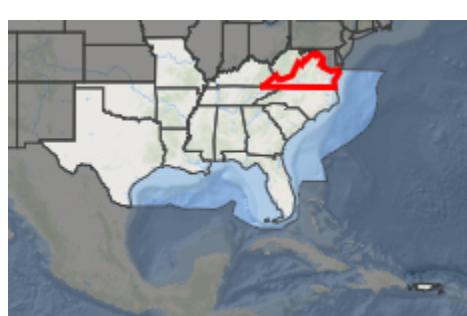
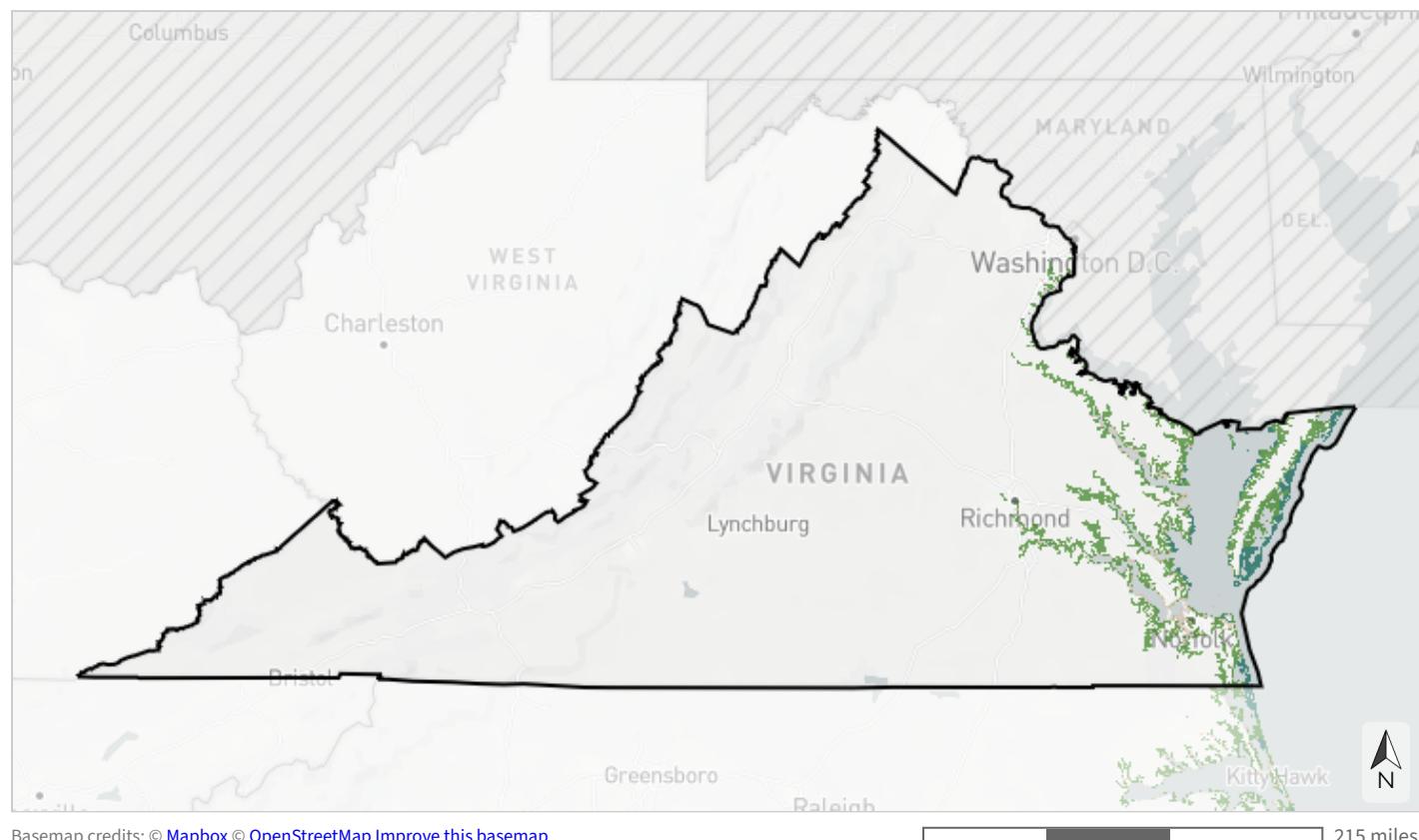
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Coastal shoreline condition

This indicator assesses shoreline condition based on the presence of hardened structures like jetties, groins, and riprap, as well as other human development. By restricting the natural movement of sediment, shoreline armoring increases erosion, prevents the inland migration of coastal ecosystems in response to sea-level rise, and degrades habitat for birds, sea turtles, fish, plants, and other species both on and offshore. Natural shorelines in harder-to-develop coastal areas receive the highest shoreline condition scores, while hardened shorelines receive the lowest scores. This indicator originates from the National Oceanic and Atmospheric Administration's Environmental Sensitivity Index dataset.



- Natural and harder to develop
- Natural
- Partially armored and harder to develop
- Partially armored
- Armored

Table 27: Indicator values for coastal shoreline condition within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Natural and harder to develop	25,273	<0.1%
	Natural	104,234	0.4%
	Partially armored and harder to develop	131	<0.1%
↓ Low	Partially armored	2,555	<0.1%
	Armored	14,854	<0.1%
	<i>Area not evaluated for this indicator</i>	27,213,233	99.5%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

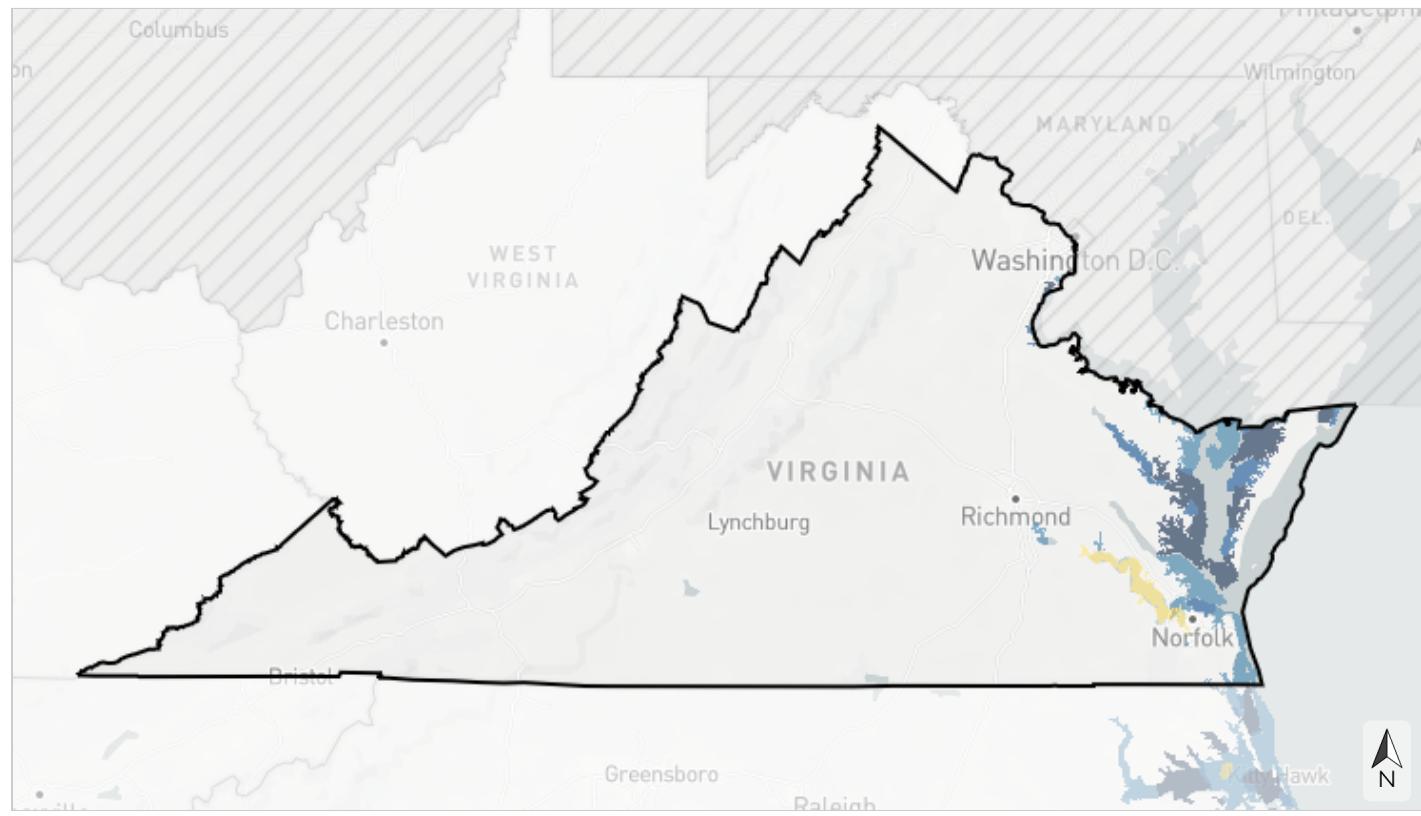
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

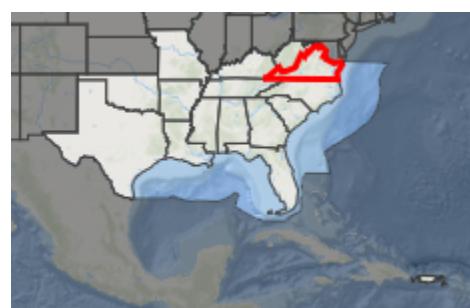
## Estuarine coastal condition

This indicator combines measures of water quality, sediment quality, contaminants in fish tissue, and benthic community condition to create an overall index of coastal estuarine condition. Estuaries serve as important nursery habitat for wildlife, including many species of fish and shellfish eaten as seafood. They also improve water quality by filtering out sediments and pollutants, provide recreational opportunities, and support coastal economies. This indicator originates from the Environmental Protection Agency's National Coastal Condition Assessment data.



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54 108 215 miles



- Good
- Fair to good
- Fair
- Poor to fair
- Poor
- Shallow estuary not assessed for condition

Table 28: Indicator values for estuarine coastal condition within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

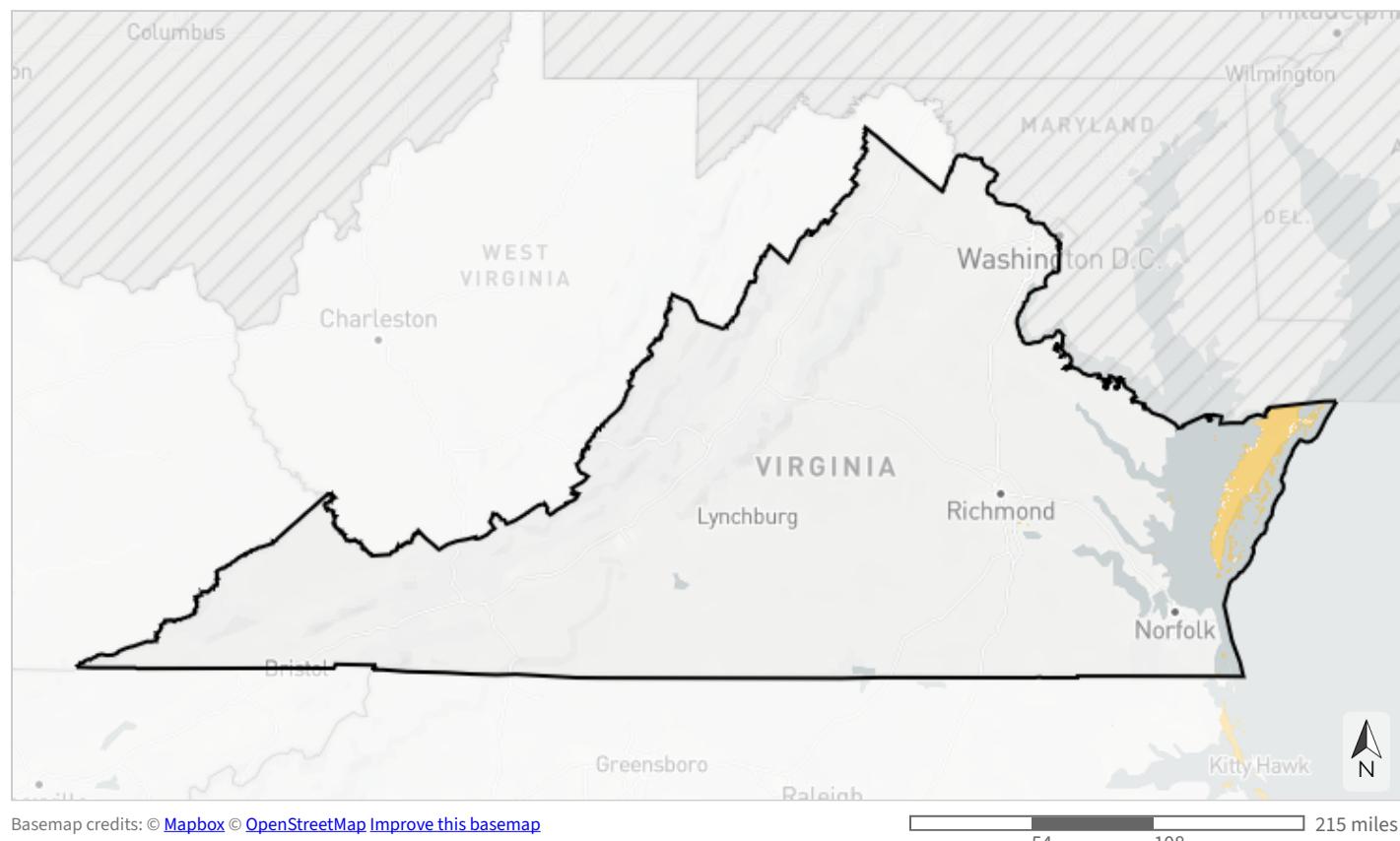
	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Good	371,002	1.4%
	Fair to good	155,082	0.6%
	Fair	307,193	1.1%
	Poor to fair	3,010	<0.1%
	Poor	107,389	0.4%
	Shallow estuary not assessed for condition	396,221	1.4%
↓ Low	<i>Area not evaluated for this indicator</i>	26,020,383	95.1%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).

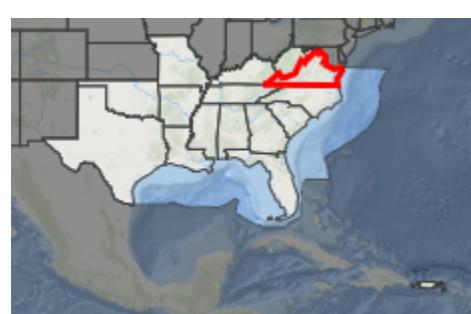


## Coastal & marine Island habitat

This indicator represents important habitat for coastal island-dependent species across the Southeast. Because the isolation of islands can make them ecologically unique and protect them from disturbance and mainland predators, they often serve as important habitat for many species of mammals, plants, and insects, as well as breeding coastal birds and sea turtles. The highest scores go to island critical habitat for six threatened and endangered animal and plant species: piping plover, loggerhead sea turtle, Cape Sable thoroughwort, Florida semaphore cactus, silver rice rat, and Bartram's hairstreak butterfly. This indicator uses U.S. Fish and Wildlife Service critical habitat data and island boundaries from the U.S. Geological Survey and Esri.



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- Island critical habitat for any of six threatened and endangered species (piping plover, loggerhead sea turtle, Cape Sable thoroughwort, Florida semaphore cactus, silver rice rat, or Bartram's hairstreak butterfly)**
- Other island area**
- Not a coastal island**

Table 29: Indicator values for island habitat within Virginia. A good condition threshold is not yet defined for this indicator.

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Island critical habitat for any of six threatened and endangered species (piping plover, loggerhead sea turtle, Cape Sable thoroughwort, Florida semaphore cactus, silver rice rat, or Bartram's hairstreak butterfly)	0	0%
	Other island area	417,382	1.5%
↓ Low	Not a coastal island	7,179,679	26.2%
	<i>Area not evaluated for this indicator</i>	19,763,219	72.2%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

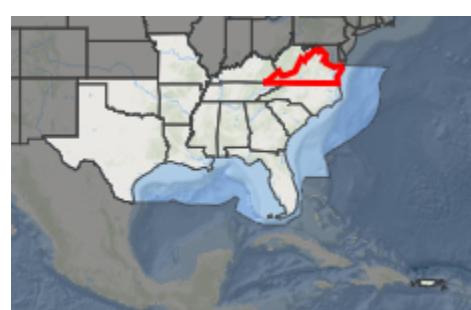
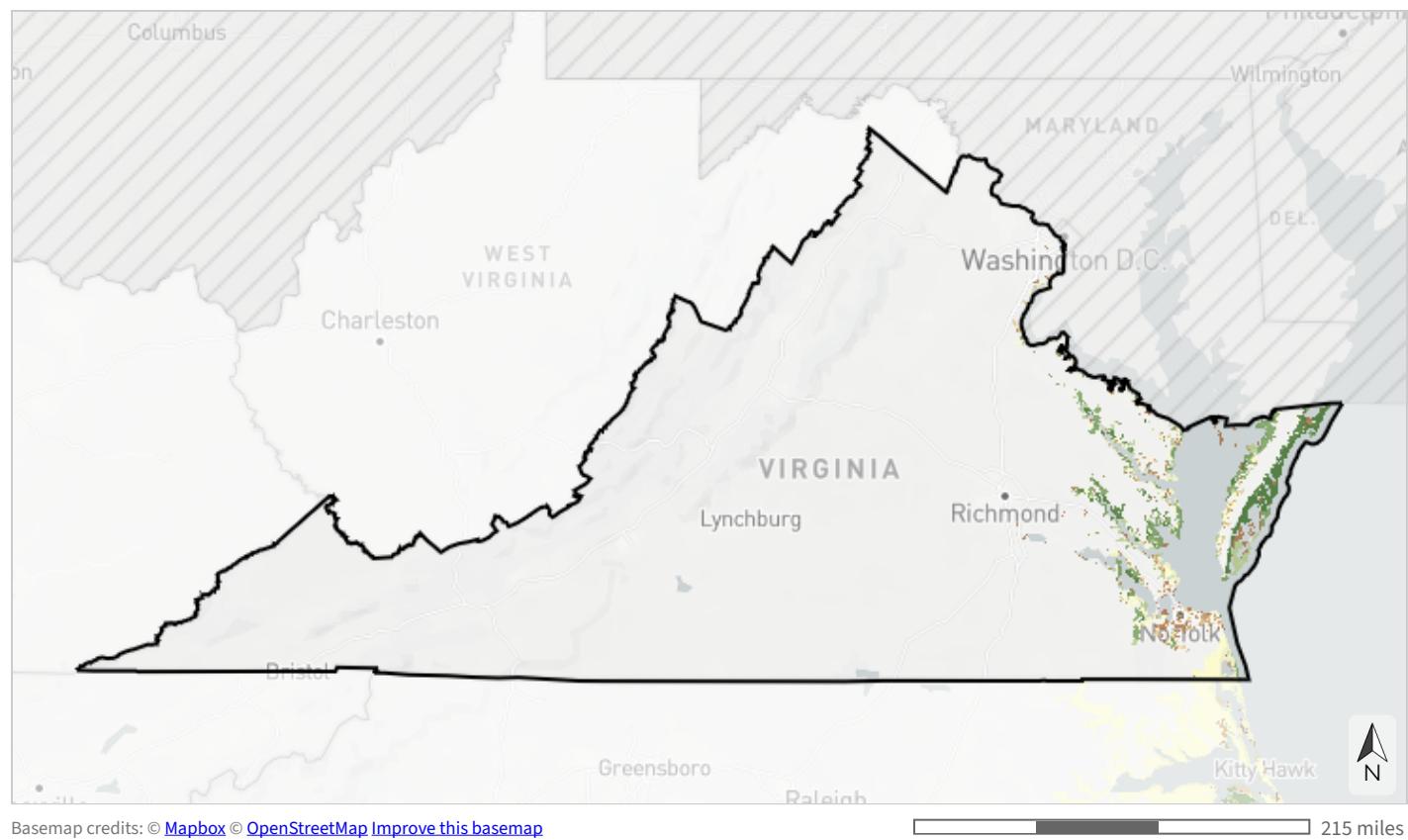
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Resilient coastal sites

This indicator depicts the capacity of coastal habitats to migrate to adjacent lowlands in order to sustain biodiversity and natural services under increasing inundation from sea-level rise. It is based on the physical and condition characteristics of current tidal complexes, their predicted migration space, and surrounding buffer areas. These characteristics include marsh complex size, shared edge with migration space, sediment balance, water quality, natural landcover, landform diversity, and more. This indicator originates from The Nature Conservancy's Resilient Coastal Sites project.



- Most resilient
- More resilient
- Slightly more resilient
- Average/median resilience
- Slightly less resilient
- Less resilient
- Least resilient

*Table 30: Indicator values for resilient coastal sites within Virginia. A good condition threshold is not yet defined for this indicator.*

		<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Most resilient		69,385	0.3%
	More resilient		46,540	0.2%
	Slightly more resilient		30,965	0.1%
	Average/median resilience		50,552	0.2%
	Slightly less resilient		3,477	<0.1%
	Less resilient		2,039	<0.1%
	Least resilient		12,307	<0.1%
↓ Low		<i>Area not evaluated for this indicator</i>	27,145,016	99.2%
		<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



## Coastal & marine **Seagrass**

This indicator represents the presence of seagrass in the Atlantic Ocean and Gulf of Mexico. Seagrasses provide food and habitat for a range of marine and estuarine wildlife, including fish, sea turtles, shrimp, crabs, oysters, and more. They also produce oxygen, filter water, control erosion, and buffer storms. Seagrasses serve as an important indicator of the overall health of coastal ecosystems because they are sensitive to water quality and require sufficiently clear water for sunlight to penetrate. This indicator originates from the National Oceanic and Atmospheric Administration's Marine Cadastre.

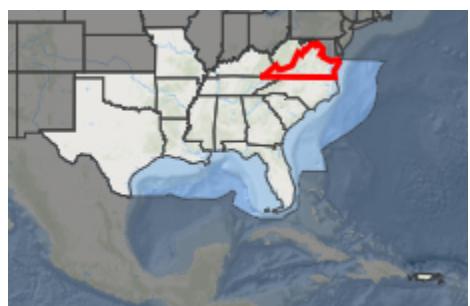
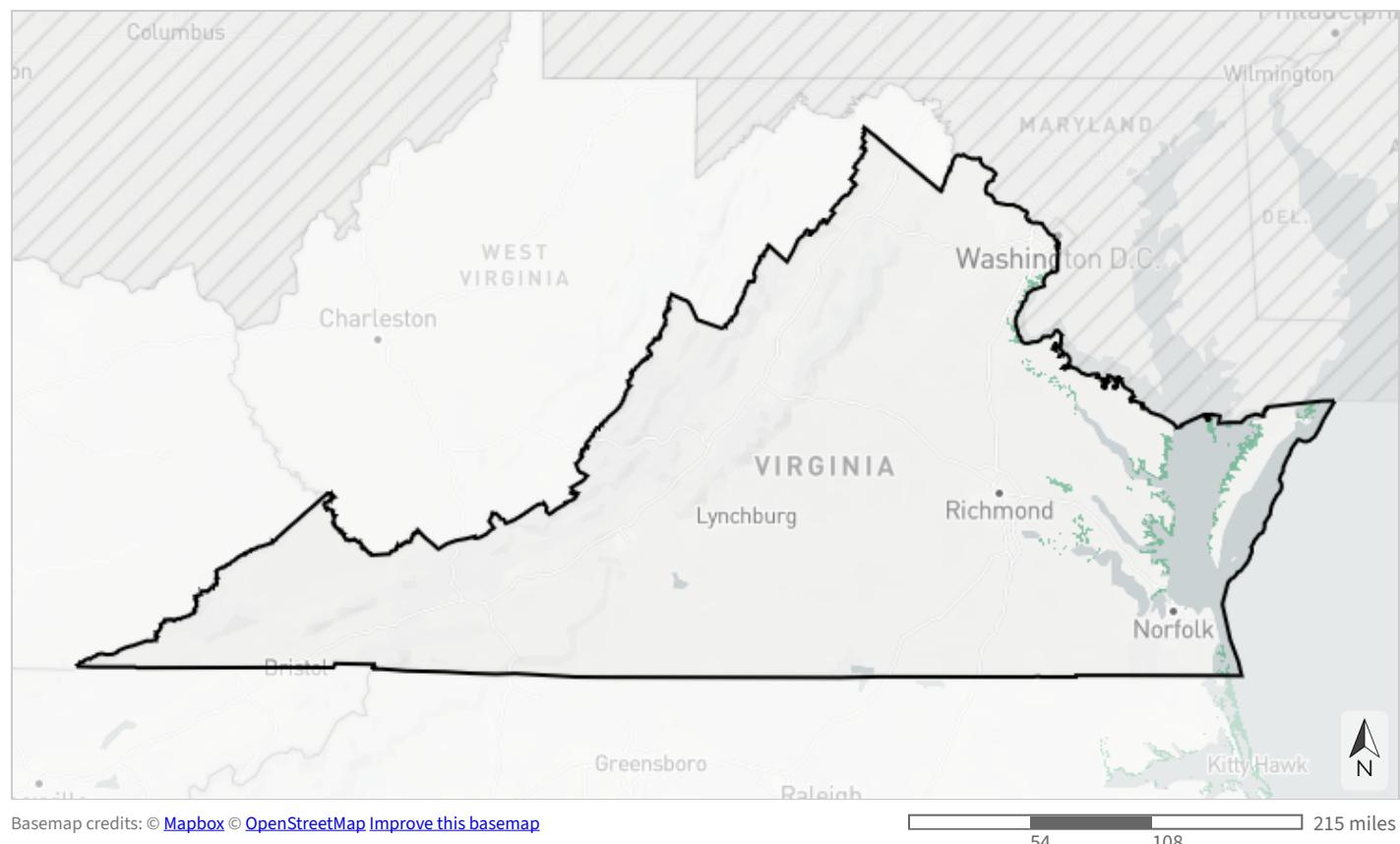


Table 31: Indicator values for seagrass within Virginia. A good condition threshold is not yet defined for this indicator.

	Indicator Values	Acres	Percent of Area
↑ High	Seagrass present	41,268	0.2%
	<i>Area not evaluated for this indicator</i>	27,319,012	99.8%
	<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

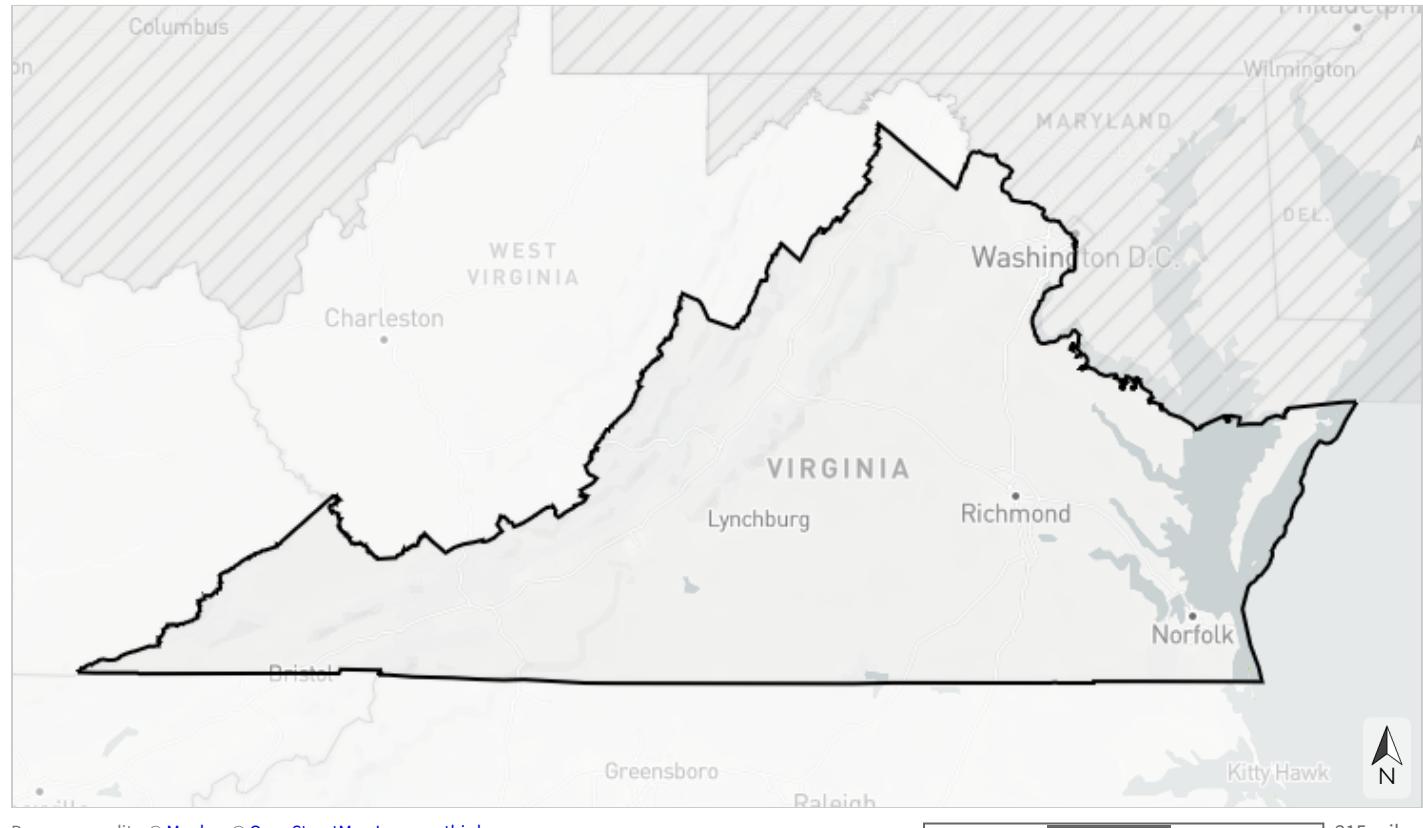
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



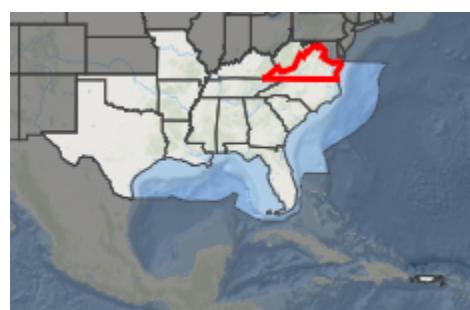
Coastal &amp; marine

## South Atlantic maritime forest

This indicator depicts the maritime forest currently present in the South Atlantic. Since maritime forest has been substantially reduced from its historic extent, protecting the remaining acreage is particularly important. This ecosystem supports a unique suite of plants that tolerate wind, salt, and flooding, as well as many species of birds, mammals, and reptiles. It also helps buffer the coastline from storms. This indicator originates from LANDFIRE landcover.



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215 miles  
54 108

- Maritime forest
- Not identified as maritime forest

Table 32: Indicator values for South Atlantic maritime forest within Virginia. A good condition threshold is not yet defined for this indicator.

	Indicator Values	Acres	Percent of Area
↑ High	Maritime forest	19,968	<0.1%
↓ Low	Not identified as maritime forest	3,084,482	11.3%
	<i>Area not evaluated for this indicator</i>	24,255,831	88.7%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

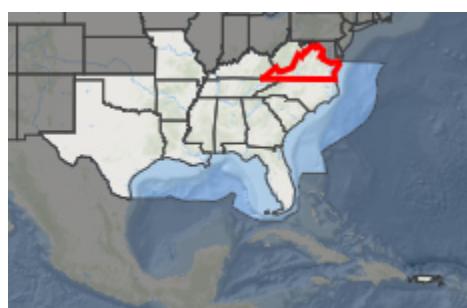
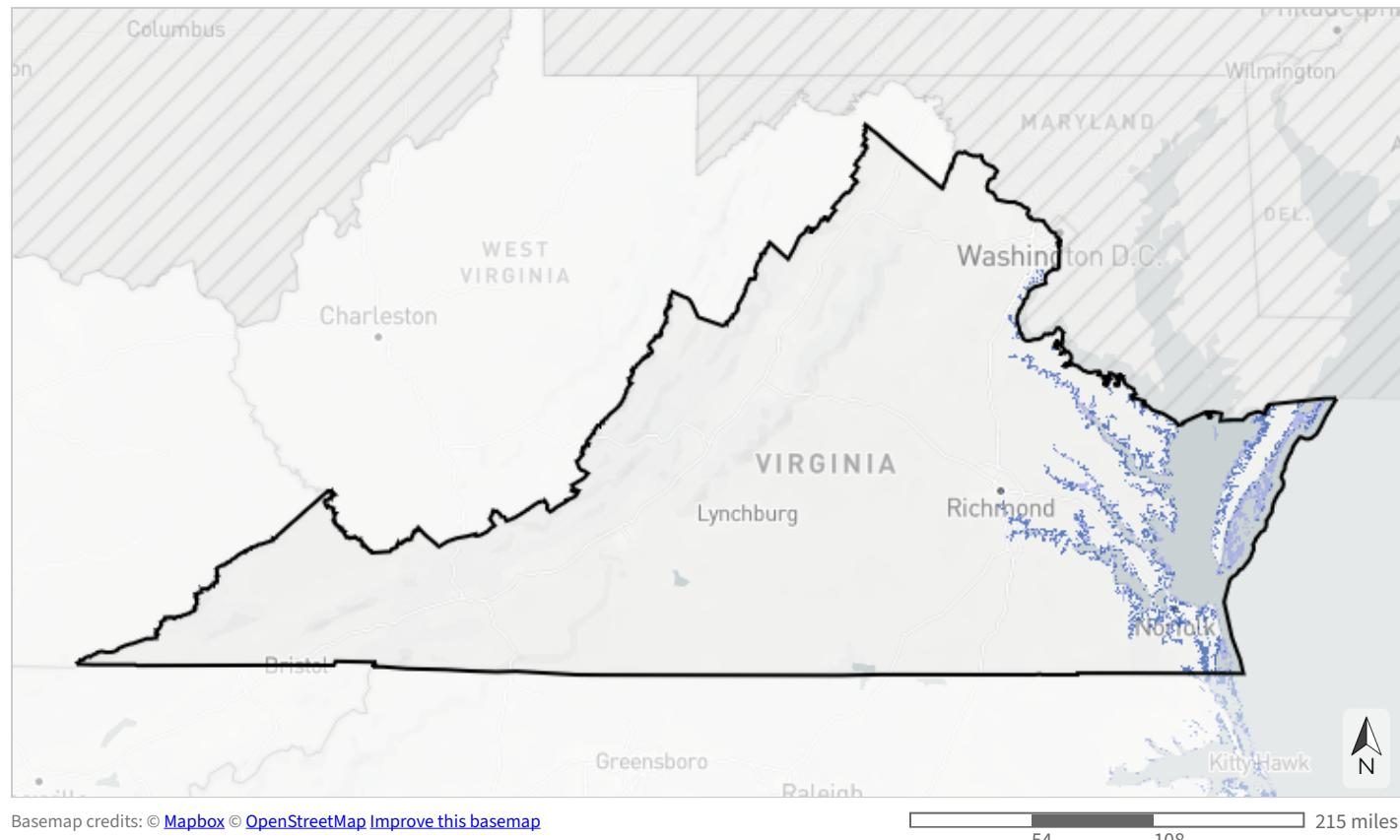
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).



Coastal &amp; marine

## Stable coastal wetlands

This indicator uses remote sensing to calculate the unvegetated-vegetated ratio of tidal wetlands, which compares how much of a wetland is not covered by plants (e.g., sediment, rocks, open water) to how much is covered by plants. Marshes that maintain a higher proportion of vegetation tend to be more stable and resilient to threats like sea-level rise, erosion, and coastal development. This ratio, and how it changes over time, is a good surrogate for salt marsh degradation processes like sediment loss and conversion to open water. This indicator originates from a U.S. Geological Survey project on an unvegetated to vegetated ratio for coastal wetlands.



- █ Stable coastal wetlands
- █ Other coastal wetlands
- █ Not identified as coastal wetlands

*Table 33: Indicator values for stable coastal wetlands within Virginia. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.*

	<b>Indicator Values</b>	<b>Acres</b>	<b>Percent of Area</b>
↑ High	Stable coastal wetlands	212,074	0.8%
	Other coastal wetlands	136,657	0.5%
↓ Low	Not identified as coastal wetlands	931,667	3.4%
	<i>Area not evaluated for this indicator</i>	26,079,882	95.3%
<b>Total area</b>		<b>27,360,280</b>	<b>100%</b>

↑ In good condition

↓ Not in good condition

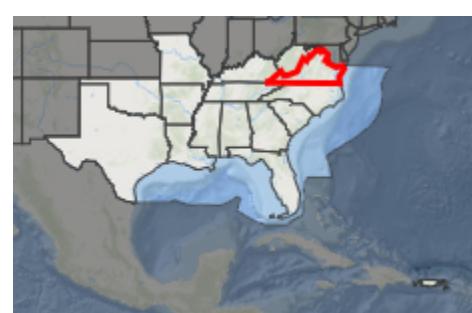
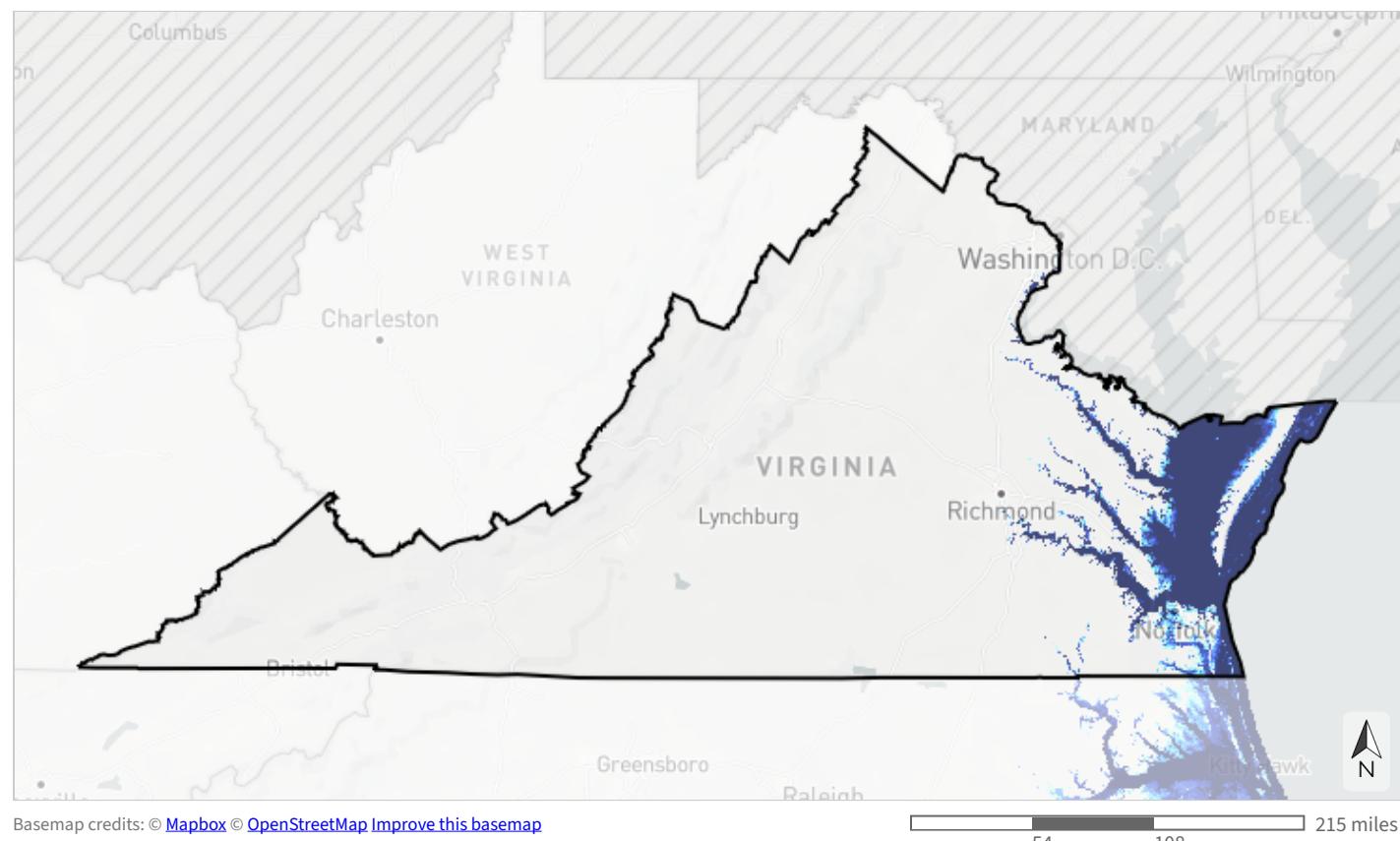
To learn more and explore the GIS data, [view this indicator in the SECAS Atlas](#).

# Threats

## Sea-level rise

NOAA's sea-level rise (SLR) inundation models represent areas likely to experience flooding at high tide based on each foot of SLR above current levels. Darker blue areas will experience flooding first, and at greater depth, compared to lighter blue areas. These models are not linked to a future timeframe; see the projections below. NOAA calculates the inundation footprint at "mean higher high water", or the average highest daily tide. The area covered in each SLR scenario includes areas projected to be inundated at lower levels. For example, the area inundated by 4 ft of SLR also includes areas inundated by 3 ft, 2 ft, 1 ft, and 0 ft of SLR (where 0 ft represents current levels).

To explore additional SLR information, please see NOAA's [Sea Level Rise Viewer](#).



Flooding extent by projected sea-level rise (ft)



Table 34: Extent of flooding by projected average highest daily tide due to sea level rise within Virginia. Values from the [NOAA sea-level rise inundation data](#).

<b>Feet of sea-level rise</b>	<b>Acres</b>	<b>Percent of Area</b>
0 feet	1,945,569	7.1%
1 foot	2,061,846	7.5%
2 feet	2,144,030	7.8%
3 feet	2,193,012	8.0%
4 feet	2,241,151	8.2%
5 feet	2,286,589	8.4%
6 feet	2,336,585	8.5%
7 feet	2,391,425	8.7%
8 feet	2,449,045	9.0%
9 feet	2,507,203	9.2%
10 feet	2,566,709	9.4%
<i>Not projected to be inundated by up to 10 feet</i>	5,392,743	19.7%
<i>Sea-level rise unlikely to be a threat (inland counties)</i>	19,400,731	70.9%
<i>Sea-level rise data unavailable</i>	97	<0.1%
<b>Total area</b>	<b>27,360,280</b>	<b>100%</b>

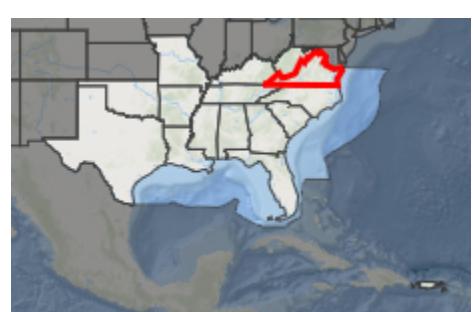
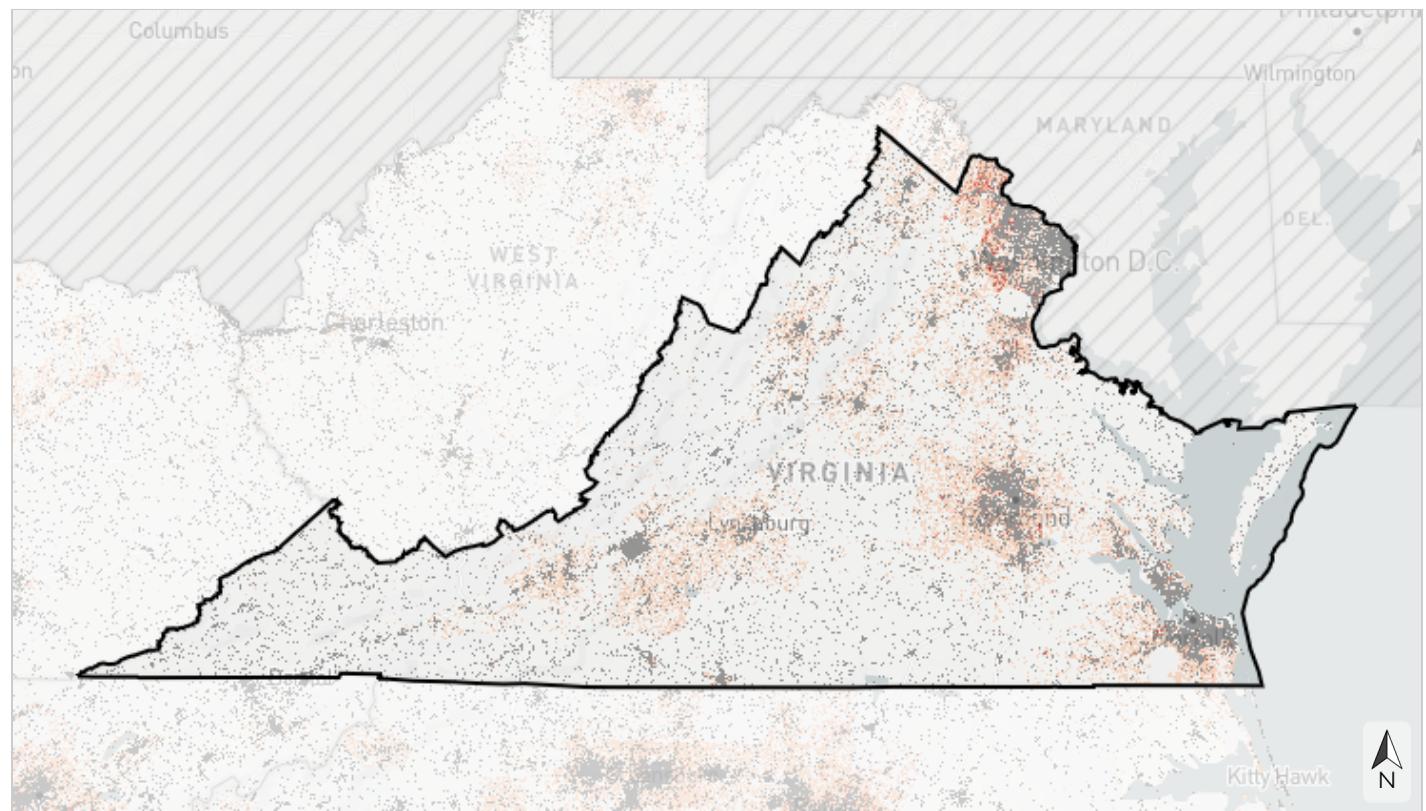
Table 35: Projected sea level rise by decade within Virginia. Values are based on area-weighted averages of decadal projections for 1-degree grid cells that overlap this area based on [NOAA's 2022 Sea Level Rise Report](#). 2060 corresponds to the [SECAS goal](#): a 10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060.

<b>SLR Scenario</b>	<b>2020 (ft)</b>	<b>2030 (ft)</b>	<b>2040 (ft)</b>	<b>2050 (ft)</b>	<b>2060 (ft)</b>	<b>2070 (ft)</b>	<b>2080 (ft)</b>	<b>2090 (ft)</b>	<b>2100 (ft)</b>
Low	0.4	0.65	0.9	1.1	1.3	1.5	1.6	1.8	1.9
Intermediate-low	0.43	0.71	0.98	1.2	1.5	1.8	2	2.3	2.5
Intermediate	0.44	0.73	1	1.4	1.7	2.2	2.6	3.3	4
Intermediate-high	0.44	0.75	1.1	1.5	2.1	2.7	3.5	4.3	5.3
High	0.44	0.77	1.2	1.7	2.4	3.4	4.4	5.6	6.8

## Urban growth

The FUTURES urban growth model predicts the likelihood that an area will urbanize at every decade from 2020 to 2100. Developed areas from the 2021 National Landcover Database serve as the baseline for current urban areas. The model simulates landscape change based on trends in population growth, local development suitability factors, and an urban patch-growing algorithm. It considers environmental drivers like distance to floodplain, slope, and available infrastructure, and even socio-economic status. The probability of urbanization for each area reflects how many times it urbanized out of 50 model runs.

To explore maps for additional time periods, [click here](#).



### Probability of urbanization by 2060

- Urban in 2021
- Very high likelihood of urbanization (>50% probability)
- High likelihood of urbanization (25 - 50% probability)
- Moderate likelihood of urbanization (2 - 25% probability)
- Not likely to urbanize

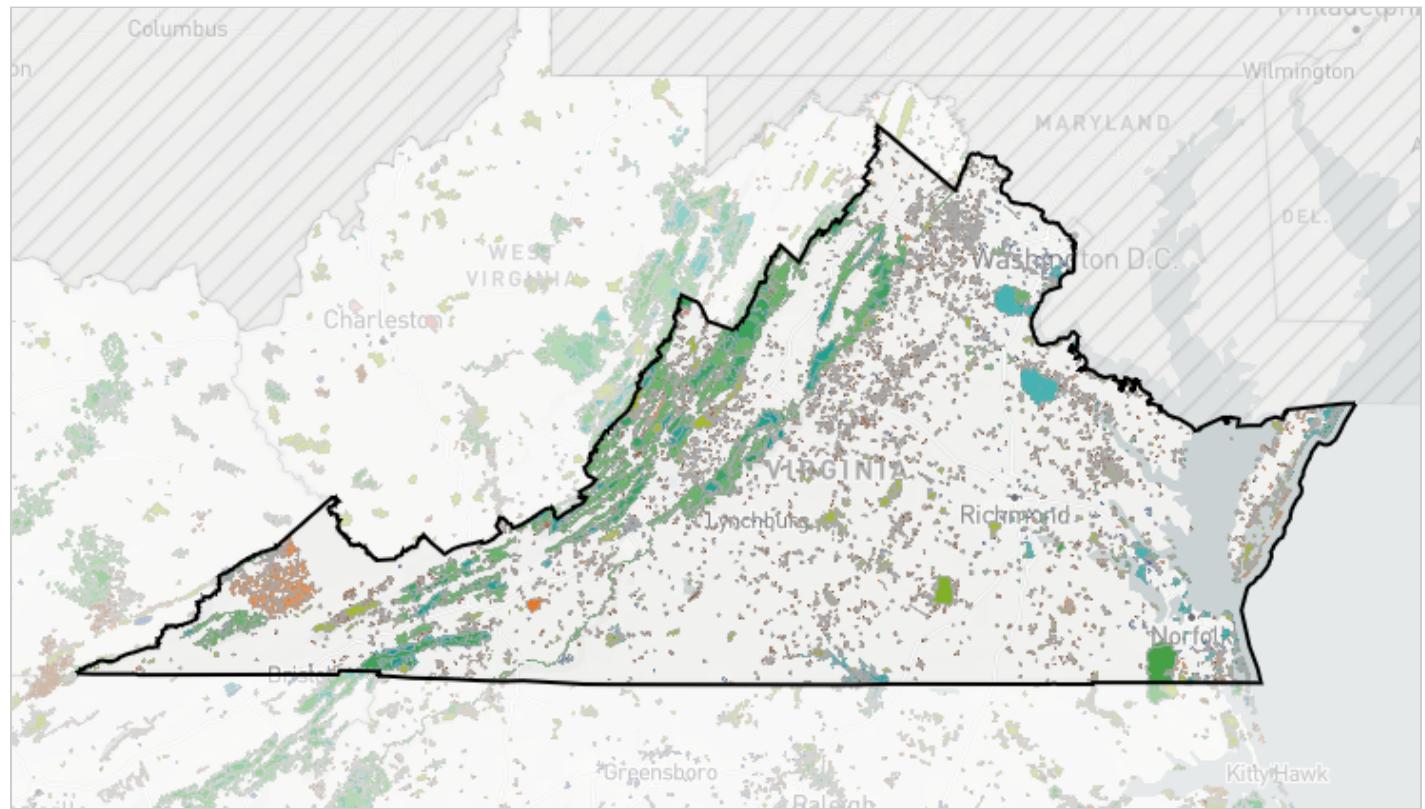
10.1% of this area is already urban in 2021, and an additional 11.0% has at least a moderate probability of urbanizing by 2060.

*Table 36: Extent of projected urbanization by decade within Virginia. Values from [FUTURES model projections for the contiguous United States](#) developed by the [Center for Geospatial Analytics](#), NC State University. 2060 corresponds to the [SECAS goal](#): a 10% or greater improvement in the health, function, and connectivity of Southeastern ecosystems by 2060.*

<b>Decade</b>	<b>Acres</b>	<b>Percent of Area</b>
Urban in 2021	2,771,595	10.1%
2030 projected extent	2,860,407	10.5%
2040 projected extent	2,906,823	10.6%
2050 projected extent	2,940,305	10.7%
2060 projected extent	2,972,486	10.9%
2070 projected extent	2,998,741	11.0%
2080 projected extent	3,017,621	11.0%
2090 projected extent	3,029,372	11.1%
2100 projected extent	3,034,869	11.1%
<i>Not projected to urbanize by 2100</i>	21,181,290	77.4%
<b>Total area</b>		<b>27,360,280</b>
		<b>100%</b>

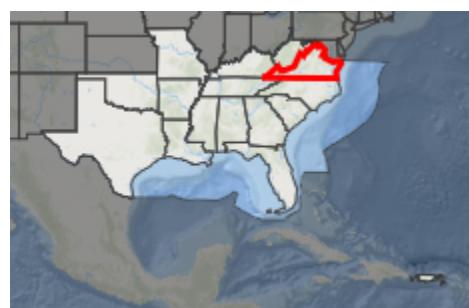
# Ownership and Partners

## Conserved lands ownership



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54 108 215 miles

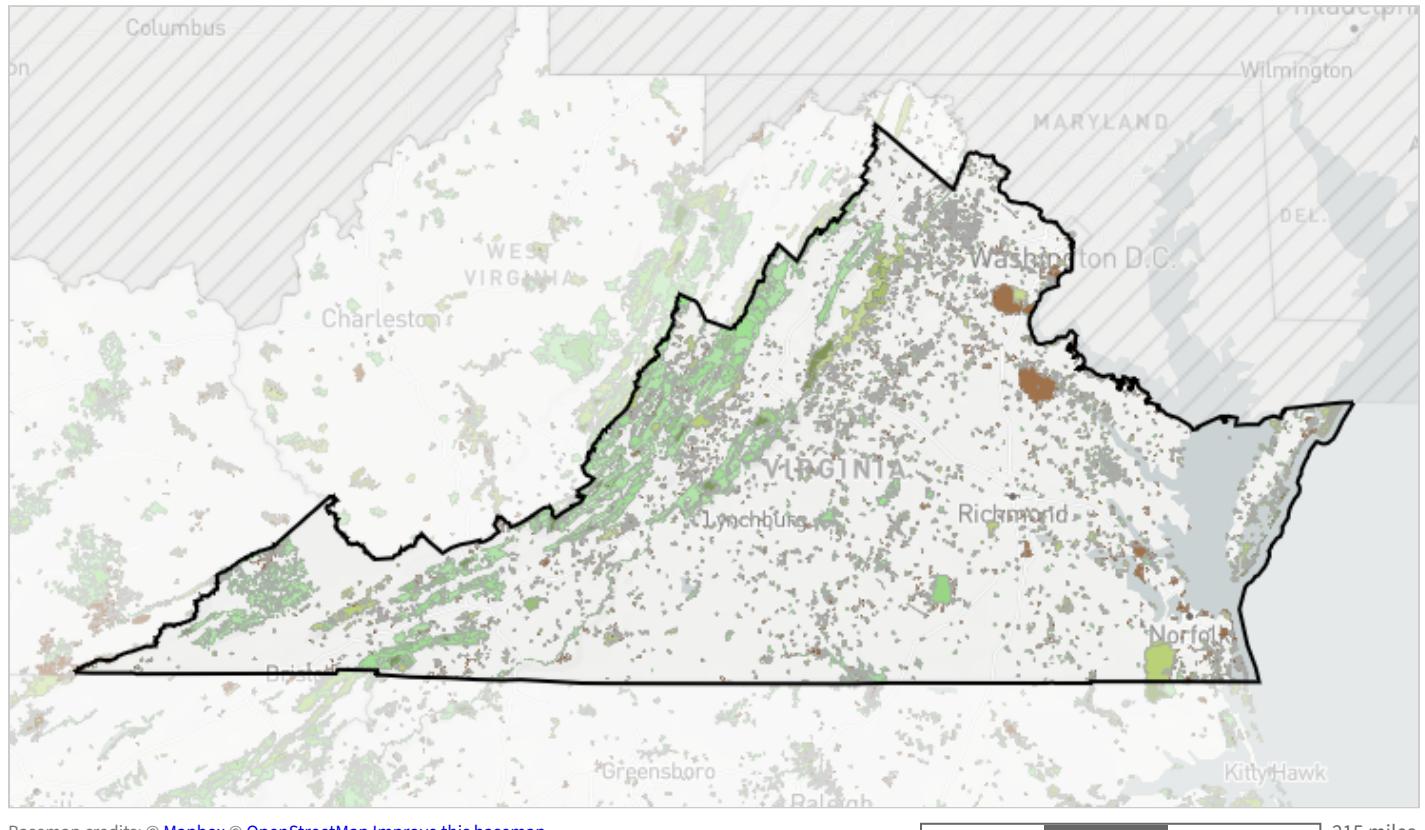


Federal	Joint
State/province	Private non-profit conserved lands
Territorial	Private conservation land
Regional	Tribal
Local	Designation
	Ownership unknown

*Table 37: Extent of ownership class within Virginia. Protected areas are derived from the [Protected Areas Database of the United States](#) (PAD-US v4.0 and v3.0) and include Fee, Designation, Easement, Marine, and Proclamation (Dept. of Defense lands only) boundaries. Note: areas are based on the polygon boundary of this area compared to protected area polygons, rather than pixel-level analyses used elsewhere in this report. Also note: PAD-US includes protected areas that may overlap within a given area; this may cause the area within and between the following categories to be greater than the actual ground area.*

<b>Ownership</b>	<b>Acres</b>	<b>Percent of Area</b>
Federal	2,313,138	8.5%
State/province	939,656	3.4%
Regional	24,860	<0.1%
Local	292,494	1.1%
Joint	4,179	<0.1%
Private non-profit conserved lands	364,772	1.3%
Private conservation land	2,486,792	9.1%
Tribal	4,996	<0.1%
Designation	1,217,440	4.4%
Ownership unknown	146,338	0.5%

## Land protection status



- Managed for biodiversity (disturbance events proceed or are mimicked)
- Managed for biodiversity (disturbance events suppressed)
- Managed for multiple uses (subject to extractive uses such as mining or logging, or OHV use)
- No known mandate for biodiversity protection

*Table 38: Extent of land protection status within Virginia. Protected areas are derived from the [Protected Areas Database of the United States](#) (PAD-US v4.0 and v3.0) and include Fee, Designation, Easement, Marine, and Proclamation (Dept. of Defense lands only) boundaries. Note: areas are based on the polygon boundary of this area compared to protected area polygons, rather than pixel-level analyses used elsewhere in this report. Also note: PAD-US includes protected areas that may overlap within a given area; this may cause the area within and between the following categories to be greater than the actual ground area.*

<b>Land Protection Status</b>	<b>Acres</b>	<b>Percent of Area</b>
Managed for biodiversity (disturbance events proceed or are mimicked)	376,944	1.4%
Managed for biodiversity (disturbance events suppressed)	1,345,096	4.9%
Managed for multiple uses (subject to extractive uses such as mining or logging, or OHV use)	4,273,692	15.6%
No known mandate for biodiversity protection	1,798,934	6.6%

## Protected Areas

- George Washington and Jefferson National Forest (USDA FOREST SERVICE; 1,673,153 acres)
- Virginia Outdoors Foundation Easement (Private; 829,011 acres)
- SHEN (NPS; 195,789 acres)
- Mount Rogers (Unknown owner; 154,913 acres)
- Cumberland Forest (The Nature Conservancy; 154,576 acres)
- Great Dismal Swamp National Wildlife Refuge (Fee; 86,451 acres)
- GREAT DISMAL SWAMP NATIONAL WILDLIFE REFUGE (Fee; 86,181 acres)
- TNC Conservation Easement (Private Land Owner; 84,934 acres)
- Shenandoah Wilderness (Unknown owner; 82,336 acres)
- Fort A P Hill (Unknown owner; 74,612 acres)
- The Nature Conservancy Easement (PVT; 67,759 acres)
- Marine Corps Base Quantico (Unknown owner; 59,027 acres)
- VA DOF Easement (Private; 56,424 acres)
- Tidal Lands (Commonwealth of Virginia; 53,957 acres)
- Fort Pickett Military Reservation (VA Army National Guard; 41,156 acres)
- Fort Pickett (VA Army National Guard; 41,156 acres)
- NG Fort Pickett MTC & FMS 15 (Unknown owner; 41,106 acres)
- Appomattox-Buckingham State Forest (VA Dept of Forestry; 39,499 acres)
- John H. Kerr Reservoir (Unknown owner; 37,318 acres)
- BLRI (NPS; 35,237 acres)
- Virginia Department of Historic Resources Easement (PVT; 34,867 acres)
- Goshen-Little North Mountain (VA Department of Wildlife Resources; 33,315 acres)
- Goshen and Little North Mountain Wildlife Management Area (VA Dept of Wildlife Resources; 33,231 acres)
- DOF Easement (PVT; 30,962 acres)
- Little River (Unknown owner; 27,292 acres)

# Credits

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## Data credits

Land ownership and conservation status is derived from the [Protected Areas Database of the United States](#) (PAD-US v4.0 and v3.0).

Future urban growth estimates derived from [FUTURES model projections for the contiguous United States](#) developed by the [Center for Geospatial Analytics](#), NC State University.

Sea level rise data are derived from the National Oceanic and Atmospheric Administration's [Sea Level Rise Inundation Depth Data](#) and the [2022 Sea Level Rise Technical Report](#).

Names and descriptions of public Priority Amphibian and Reptile Areas provided by the [Amphibian and Reptile Conservancy](#) on August 30, 2024 and edited slightly for clarity and consistency.