Southeast Conservation Blueprint Summary

for Puerto Rico

Created 10/02/2024

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The Southeast Conservation Blueprint 2024

Southeast Conservation Adaptation Strategy

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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

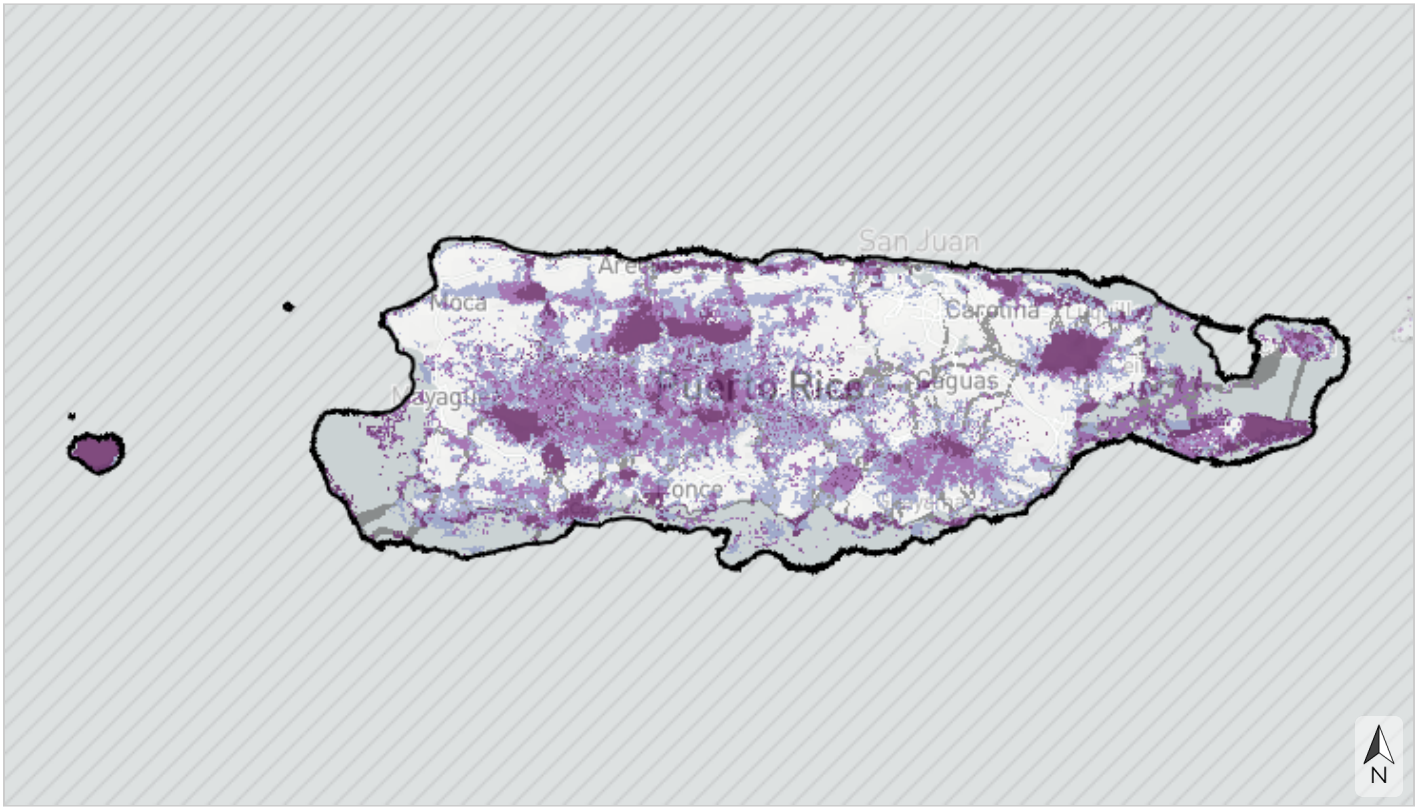
We're here to help!

- 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



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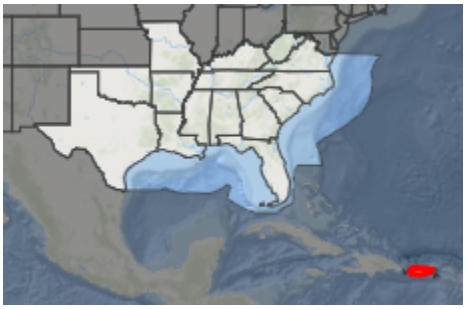


Priorities for a connected network of lands and waters

- 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.

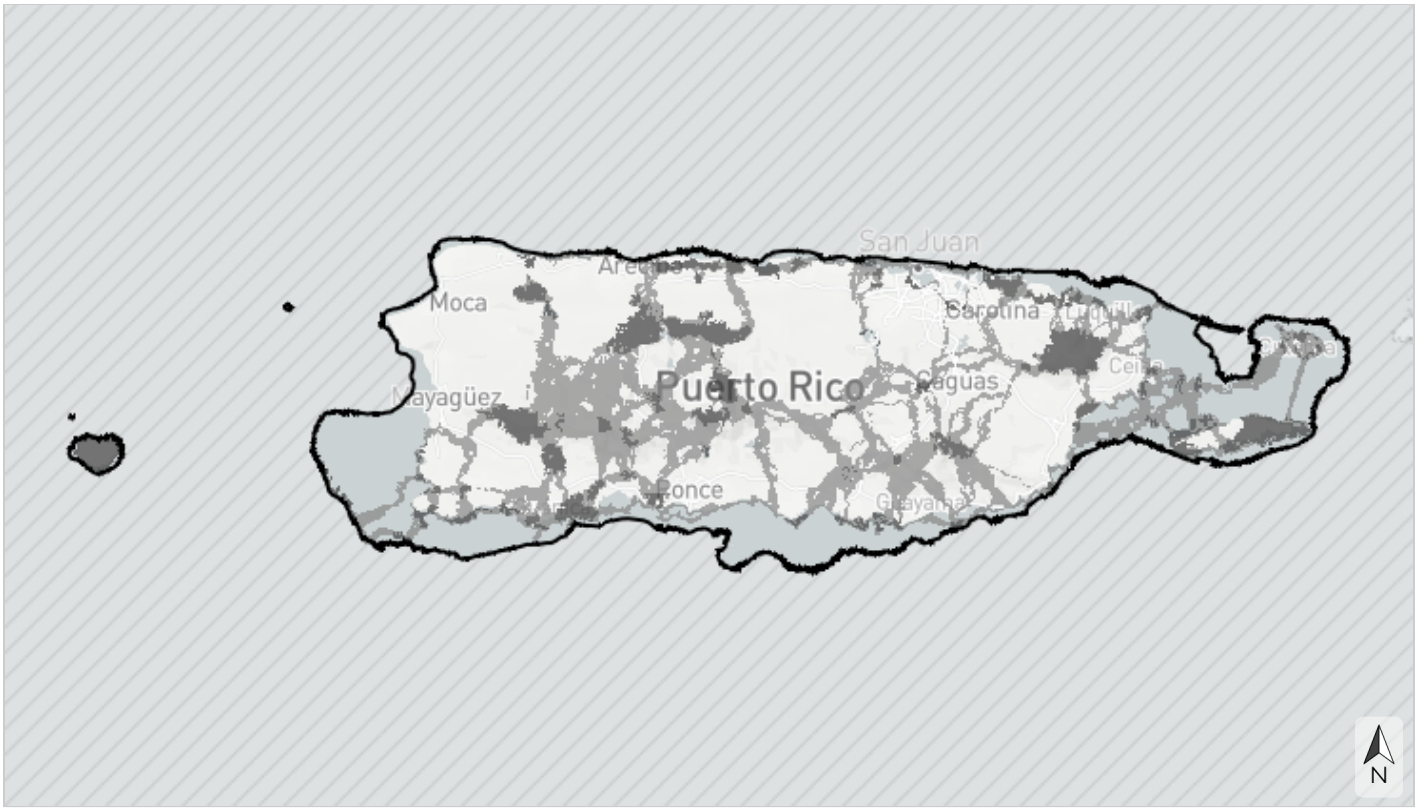
Table 1: Extent of each Blueprint priority category within Puerto Rico.

Priority Category	Acres	Percent of Area
Highest priority	304,715	10.2%
High priority	449,366	15.0%
Medium priority	607,290	20.3%
Priority connections	152,040	5.1%
Lower priority	1,474,219	49.3%
Total area	**2,987,629**	**100%**

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. In the Caribbean, hubs are large patches (~500+ acres) of highest priority Blueprint areas and/or protected lands.



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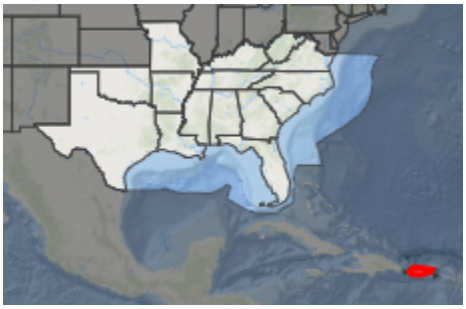


Hubs
Corridors

Table 2: Extent of hubs and corridors within Puerto Rico.

Type	Acres	Percent of Area
Hubs	254,629	8.5%
Corridors	665,271	22.3%
Not a hub or corridor	2,067,728	69.2%
Total area	**2,987,629**	**100%**

Indicator Summary

Table 3: Terrestrial indicators.

Indicator	Present
Caribbean greenways & trails	✓
Caribbean habitat patch size (large islands)	✓
Caribbean habitat patch size (small islands)	✓
Caribbean island habitat	✓
Caribbean karst habitat	✓
Caribbean landscape condition	✓
Caribbean low-urban historic landscapes	✓
Caribbean reforestation potential	✓
Caribbean urban park size	✓

Table 4: Freshwater indicators.

Indicator	Present
Caribbean natural landcover in floodplains	✓
Caribbean network complexity	✓
Caribbean permeable surface	✓

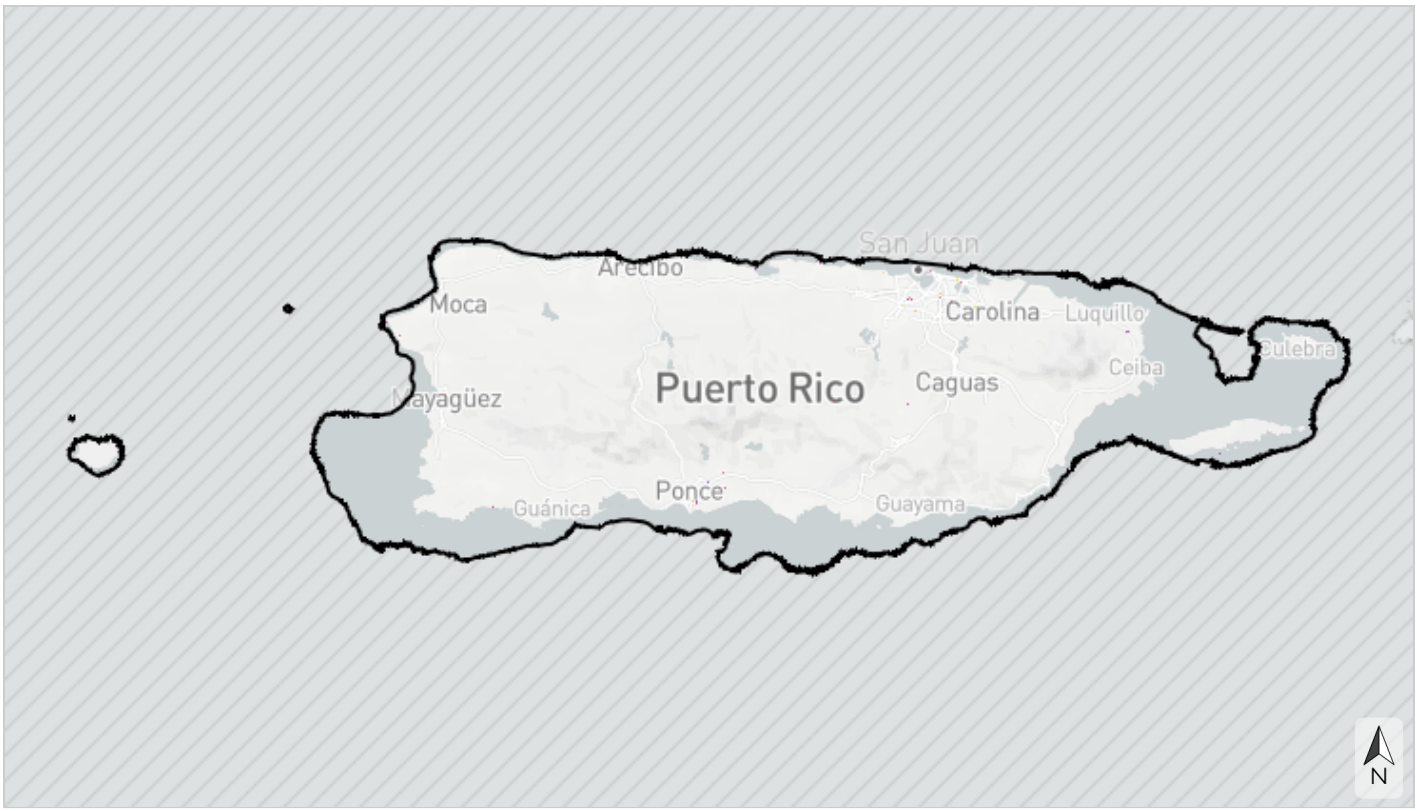
Table 5: Coastal & marine indicators.

Indicator	Present
Caribbean beach habitat	✓
Caribbean coastal shoreline condition	✓
Caribbean fish hotspots	✓
Caribbean fish nursery habitat	✓
Caribbean seagrass	✓
Caribbean shallow hardbottom and coral	✓

Terrestrial

Caribbean greenways & trails

This cultural resource indicator measures both the natural condition and connected length of greenways and trails in the U.S. Caribbean 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 Oceanic and Atmospheric Administration's Coastal Change Analysis Program landcover.



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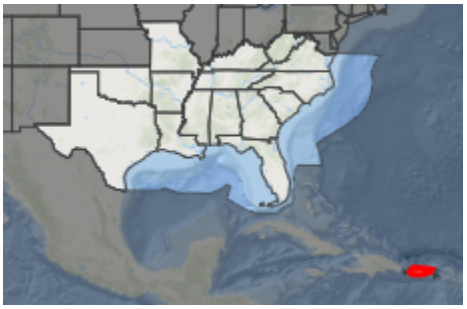

- Mostly natural and connected for 5 to <40 km or partly natural and connected for ≥40 km
- Mostly natural and connected for 1.9 to <5 km, partly natural and connected for 5 to <40 km, or developed and connected for ≥40 km
- Mostly natural and connected for <1.9 km, partly natural and connected for 1.9 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 6: Indicator values for Caribbean greenways & trails within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values	Acres	Percent of Area	
↑ High	Mostly natural and connected for 5 to <40 km or partly natural and connected for ≥40 km	1,396	<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	1,959	<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	2,380	<0.1%	↑ In good condition
	Partly natural and connected for <1.9 km or developed and connected for 1.9 to <5 km	1,388	<0.1%	↓ Not in good condition
	Developed and connected for <1.9 km	1,959	<0.1%	
	Sidewalk	216	<0.1%	
↓ Low	Not identified as a trail, sidewalk, or other path	2,281,894	76.4%	
	Area not evaluated for this indicator	*696,438*	*23.3%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean habitat patch size (large islands)

This indicator represents the size of natural habitat patches on large islands in the U.S. Caribbean that are unfragmented by roads, urban development, or agriculture. Large areas of intact natural habitat are important for many wildlife species, including reptiles and amphibians, birds, and large mammals. It uses LANDFIRE landcover and road data, mimicking Esri's intact habitat cores approach from their green infrastructure data.

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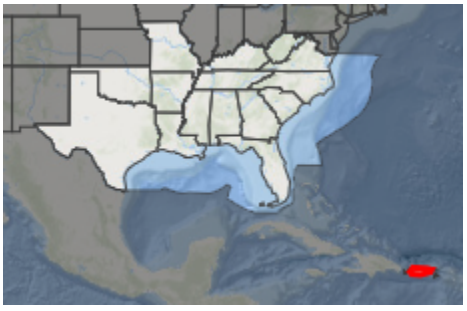

- Very large patch (>10,000 acres)
- Large patch (>1,000-10,000 acres)
- Medium patch (>100-1,000 acres)
- Small patch (>10-100 acres)
- Very small patch (≤10 acres)
- Developed or agriculture

Table 7: Indicator values for Caribbean habitat patch size (large islands) within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values	Acres	Percent of Area	
↑ High	Very large patch (>10,000 acres)	419,737	14.0%	
	Large patch (>1,000-10,000 acres)	566,422	19.0%	
	Medium patch (>100-1,000 acres)	339,664	11.4%	↑ In good condition
	Small patch (>10-100 acres)	128,675	4.3%	↓ Not in good condition
	Very small patch (≤10 acres)	66,000	2.2%	
↓ Low	Developed or agriculture	634,032	21.2%	
	Area not evaluated for this indicator	*833,098*	*27.9%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean habitat patch size (small islands)

This indicator represents the size of natural habitat patches on small islands in the U.S. Caribbean that are unfragmented by roads, urban development, or agriculture. Large areas of intact natural habitat are important for many wildlife species, including reptiles and amphibians, birds, and large mammals. It uses LANDFIRE landcover and road data, mimicking Esri's intact habitat cores approach from their green infrastructure data.

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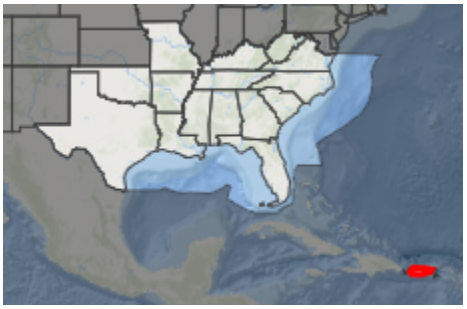


- Large patch (>1,000 acres)
- Medium patch (>100-1,000 acres)
- Small patch (>10-100 acres)
- Very small patch (≤10 acres)
- Developed or agriculture

Table 8: Indicator values for Caribbean habitat patch size (small islands) within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

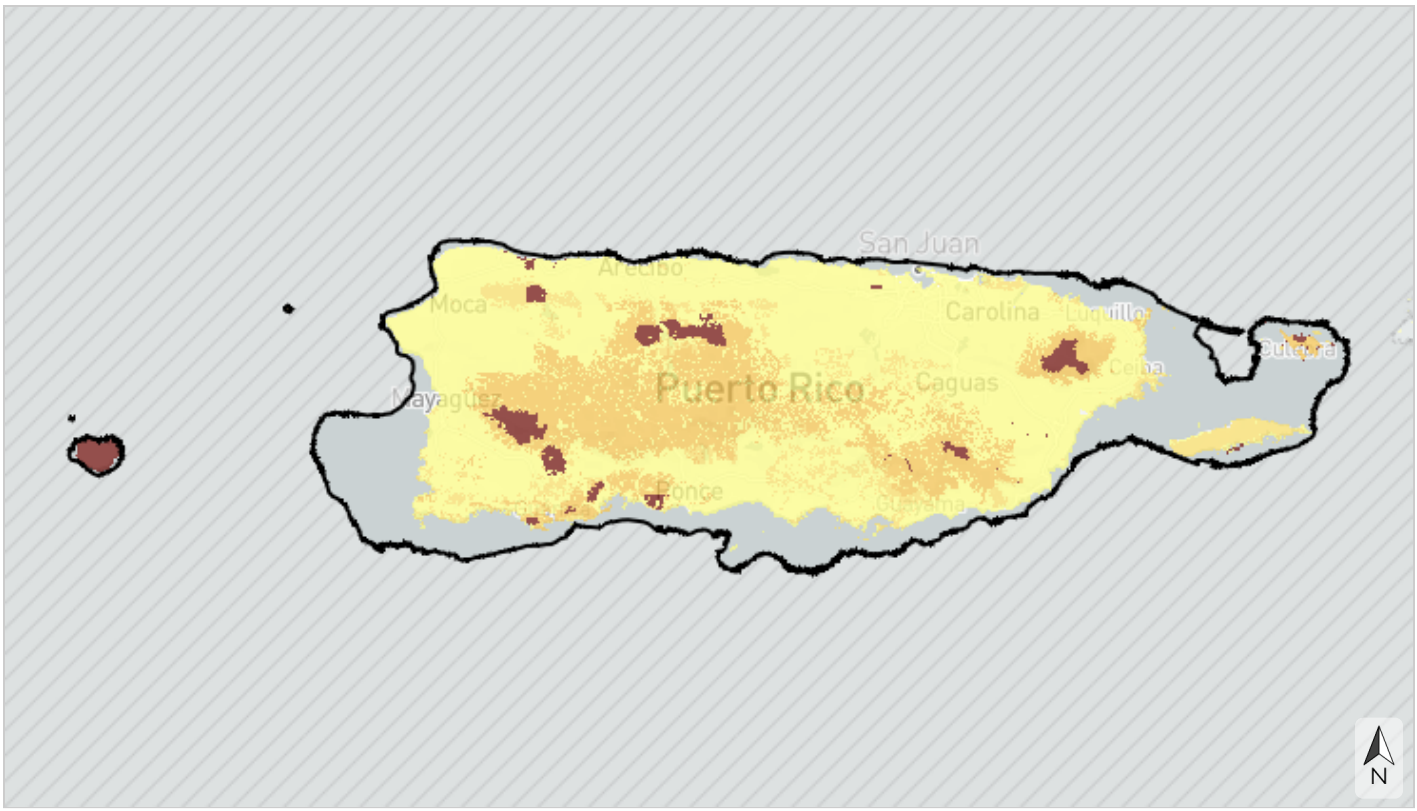
	Indicator Values	Acres	Percent of Area	
↑ High	Large patch (>1,000 acres)	34,596	1.2%	
	Medium patch (>100-1,000 acres)	12,987	0.4%	↑ In good condition
	Small patch (>10-100 acres)	4,181	0.1%	↓ Not in good condition
	Very small patch (≤10 acres)	1,601	<0.1%	
↓ Low	Developed or agriculture	6,060	0.2%	
	Area not evaluated for this indicator	*2,928,205*	*98.0%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean island habitat

This indicator represents the importance of island habitat in the U.S. Caribbean for federally listed and other imperiled species based on the presence of imperiled and invasive animals. The isolation of islands often makes them ecologically unique and protects them from disturbance and mainland predators; however, these factors also make them more vulnerable to invasive species. This indicator uses species data from Island Conservation's Threatened Island Biodiversity Database, U.S. Fish and Wildlife Service critical habitat, and the Puerto Rico and U.S. Virgin Islands Gap Analysis Program.



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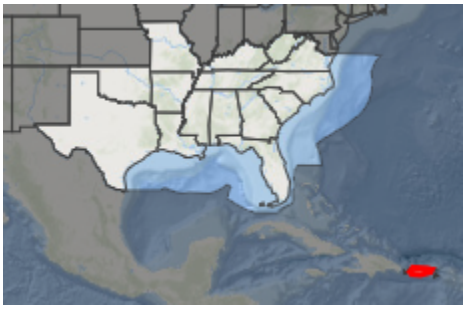


- Island area with critical habitat for a threatened or endangered species
- Island area with no invasive animals and 2+ imperiled species
- Island area with no invasive animals and 1 imperiled species
- Island area with no invasive animals
- Island area with invasive animals and 2+ imperiled species
- Island area with invasive animals and 1 imperiled species
- Island area with invasive animals
- Not an island

Table 9: Indicator values for Caribbean island habitat within Puerto Rico. A good condition threshold is not yet defined for this indicator.

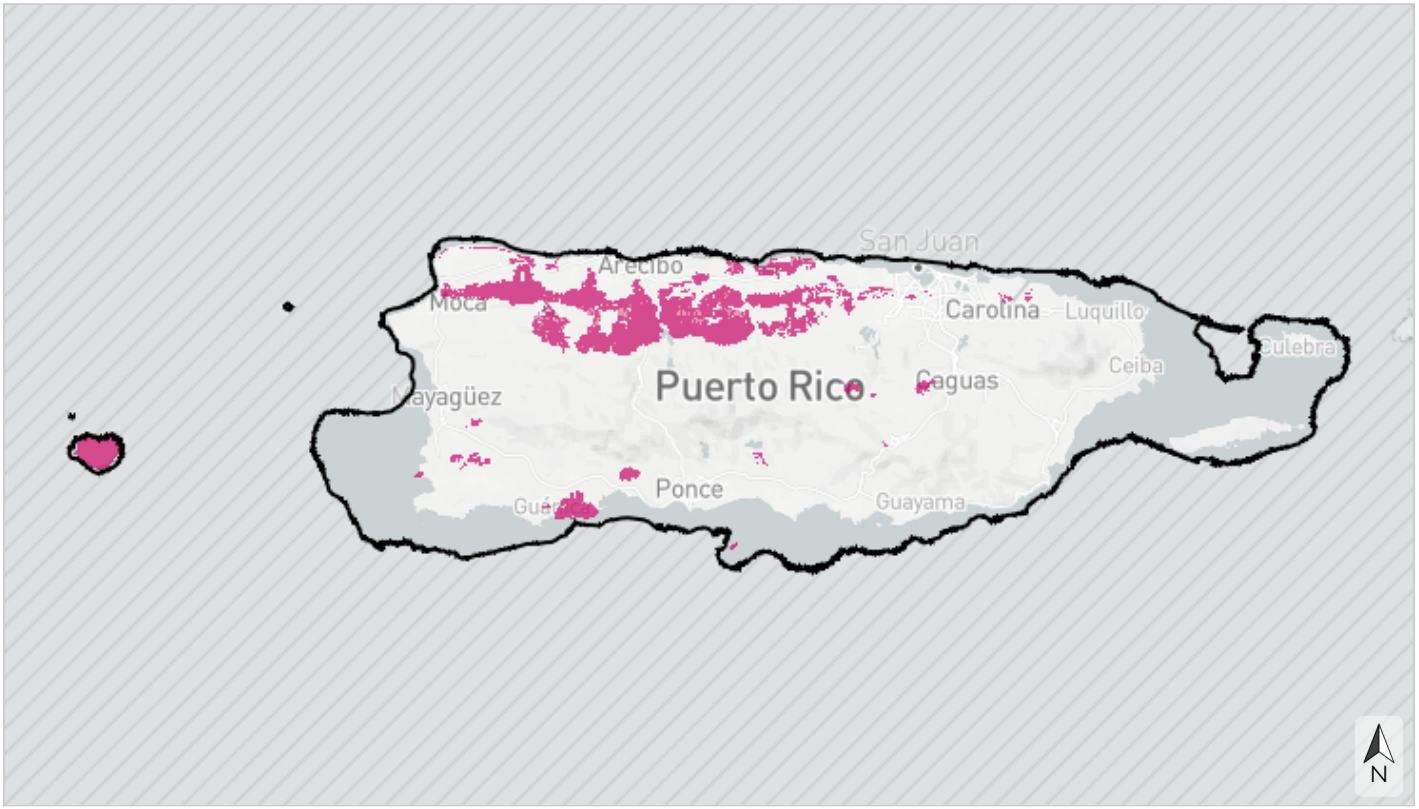
	Indicator Values	Acres	Percent of Area
↑ High	Island area with critical habitat for a threatened or endangered species	83,379	2.8%
	Island area with no invasive animals and 2+ imperiled species	29	<0.1%
	Island area with no invasive animals and 1 imperiled species	33	<0.1%
	Island area with no invasive animals	2	<0.1%
	Island area with invasive animals and 2+ imperiled species	470,049	15.7%
	Island area with invasive animals and 1 imperiled species	216,962	7.3%
	Island area with invasive animals	1,443,502	48.3%
↓ Low	Not an island	773,674	25.9%
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean karst habitat

This indicator for the U.S. Caribbean represents natural karst areas with limited human alteration from activities such as urban development and intensive agriculture. Karst is a geologically unique landscape where the movement of water through easily dissolved bedrock, particularly limestone, produces distinctive features like caves, sinkholes, and underground rivers. Areas characterized by karst geology support many unique and endemic species, help recharge freshwater aquifers, and often contain significant cultural and historic sites. This indicator combines LANDFIRE land cover with karst datasets from the Puerto Rico Department of Natural and Environmental Resources, National Park Service, and U.S. Geological Survey.



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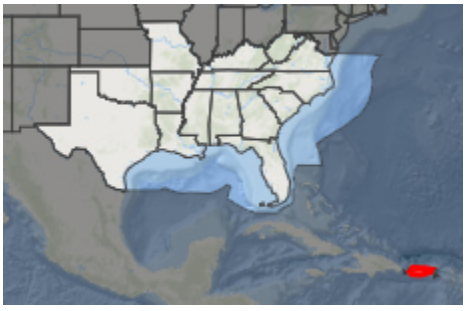


- Karst with natural landcover
- Karst with pasture, crops, or open space in developed area
- Karst with developed landcover
- Not identified as karst

Table 10: Indicator values for Caribbean karst habitat within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

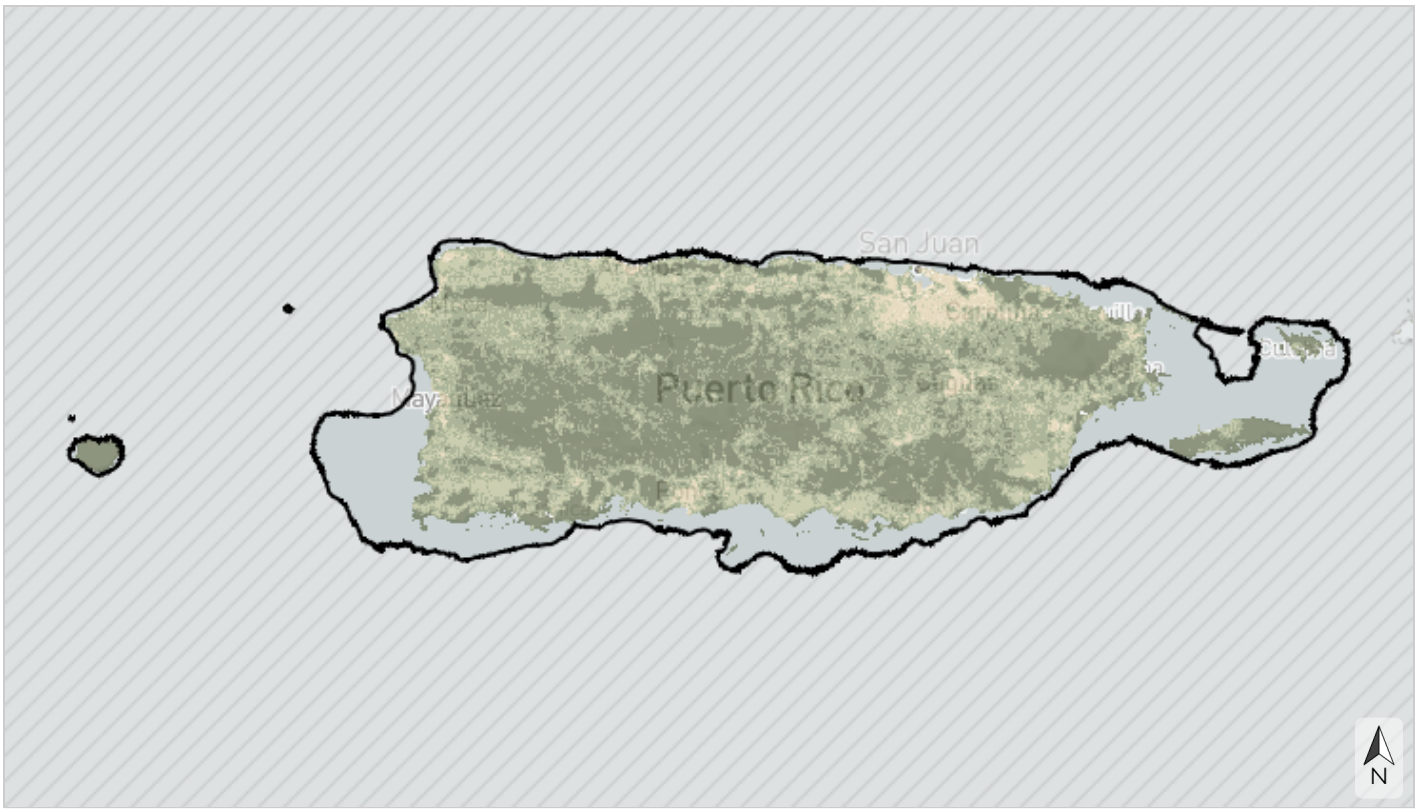
	Indicator Values	Acres	Percent of Area	
↑ High	Karst with natural landcover	214,320	7.2%	↑ In good condition
	Karst with pasture, crops, or open space in developed area	17,045	0.6%	↓ Not in good condition
	Karst with developed landcover	1,612	<0.1%	
↓ Low	Not identified as karst	1,953,047	65.4%	
	Area not evaluated for this indicator	*801,605*	*26.8%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean landscape condition

This indicator for the U.S. Caribbean 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 LANDFIRE landcover and ideas from the Florida Critical Lands and Waters Identification Project's approach for evaluating landscape integrity.



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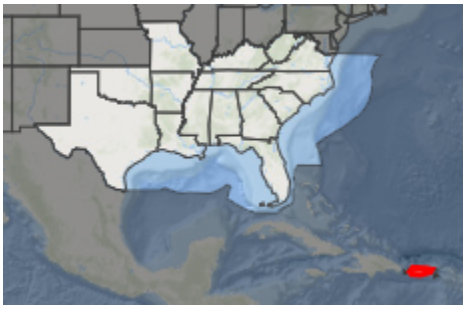

- Natural landscape
- Mostly natural landscape
- Partly natural landscape
- Altered landscape
- Heavily altered landscape

Table 11: Indicator values for Caribbean landscape condition within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values	Acres	Percent of Area	
↑ High	Natural landscape	895,032	30.0%	
	Mostly natural landscape	802,309	26.9%	↑ In good condition
	Partly natural landscape	415,482	13.9%	↓ Not in good condition
	Altered landscape	95,313	3.2%	
↓ Low	Heavily altered landscape	5,764	0.2%	
	Area not evaluated for this indicator	*773,730*	*25.9%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean low-urban historic landscapes

This cultural resource indicator is an index of sites on the National Register of Historic Places and other historic sites surrounded by limited urban development in the U.S. Caribbean. It identifies significant historic places that remain connected to their context in the natural world. This indicator uses LANDFIRE landcover and historic places data from the Puerto Rico State Historic Preservation Office, OpenStreetMap, and the University of the Virgin Islands.

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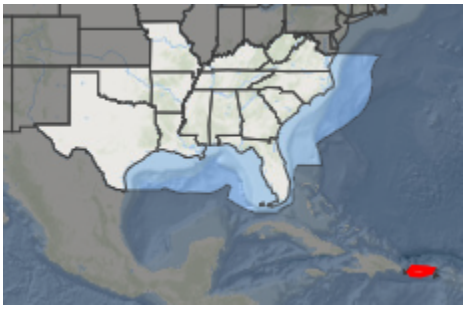


- Historic place with nearby low-urban buffer
- Historic place with nearby high-urban buffer
- Not identified as a historic place

Table 12: Indicator values for Caribbean low-urban historic landscapes within Puerto Rico. A good condition threshold is not yet defined for this indicator.

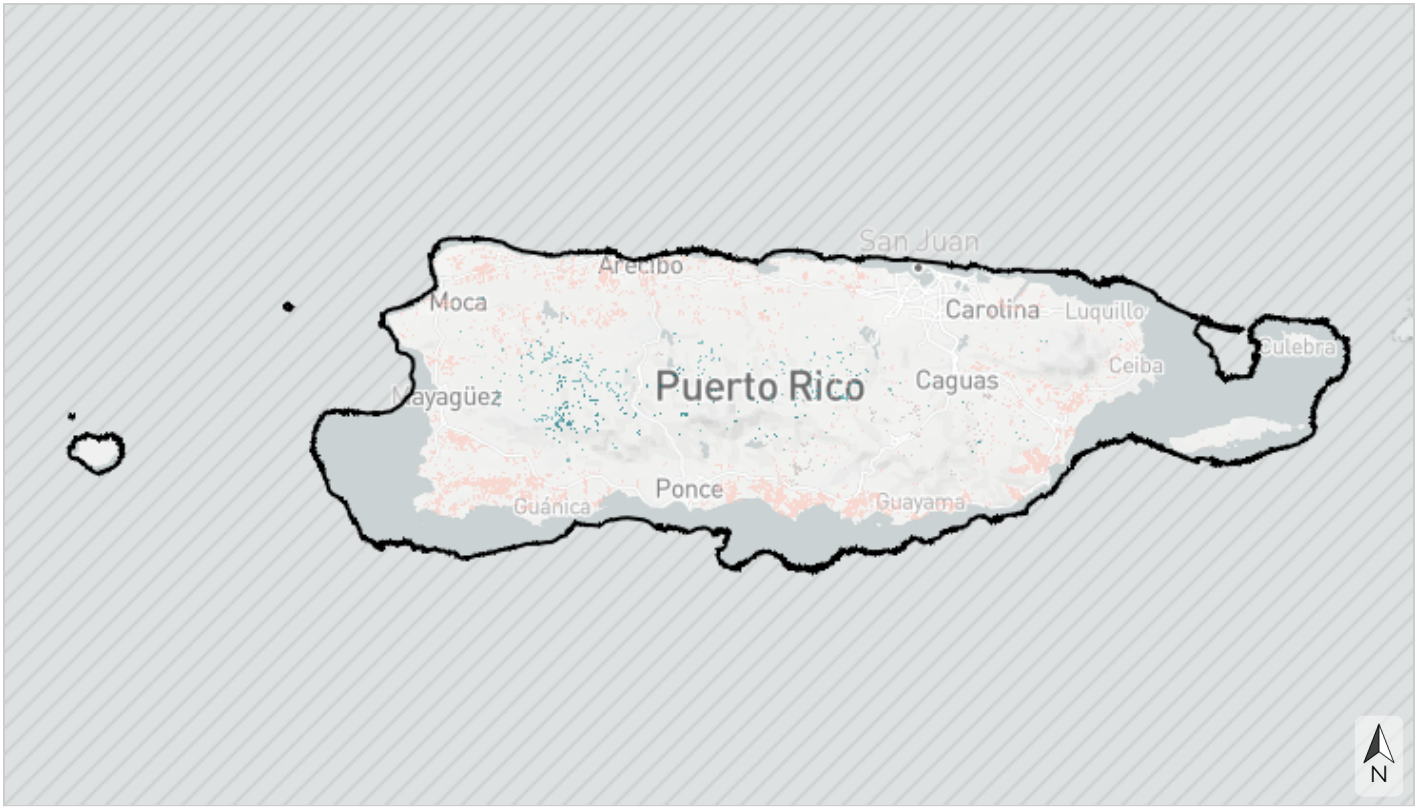
	Indicator Values	Acres	Percent of Area
↑ High	Historic place with nearby low-urban buffer	17,828	0.6%
	Historic place with nearby high-urban buffer	3,138	0.1%
↓ Low	Not identified as a historic place	2,456,357	82.2%
	Area not evaluated for this indicator	*510,307*	*17.1%*
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean reforestation potential

This indicator prioritizes areas to increase tree cover in the U.S. Caribbean based on current land uses and potential benefits for local drinking water supplies. It includes opportunities to improve water quality and species habitat by transitioning sun-grown coffee production to shade-grown; enhancing the overstory of shade-grown coffee areas; and reforesting open space in developed areas, pasture, and agricultural lands. The highest scores represent coffee plantations in watersheds with reservoirs. This indicator uses LANDFIRE landcover and U.S. Geological Survey watershed boundaries.



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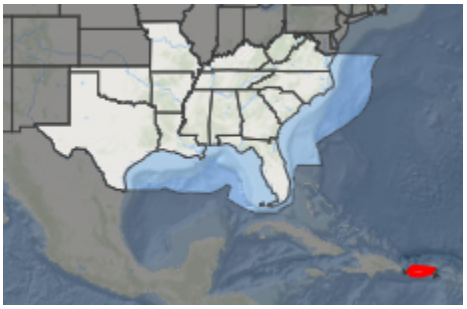


- Highest reforestation potential (coffee production in watershed with reservoir)
- Very high reforestation potential (other coffee production)
- High reforestation potential (open space in developed area, pasture, or crops in watershed with reservoir)
- Medium reforestation potential (other open space in developed area, pasture, or crops)
- Low reforestation potential (already natural or developed)

Table 13: Indicator values for Caribbean reforestation potential within Puerto Rico. A good condition threshold is not yet defined for this indicator.

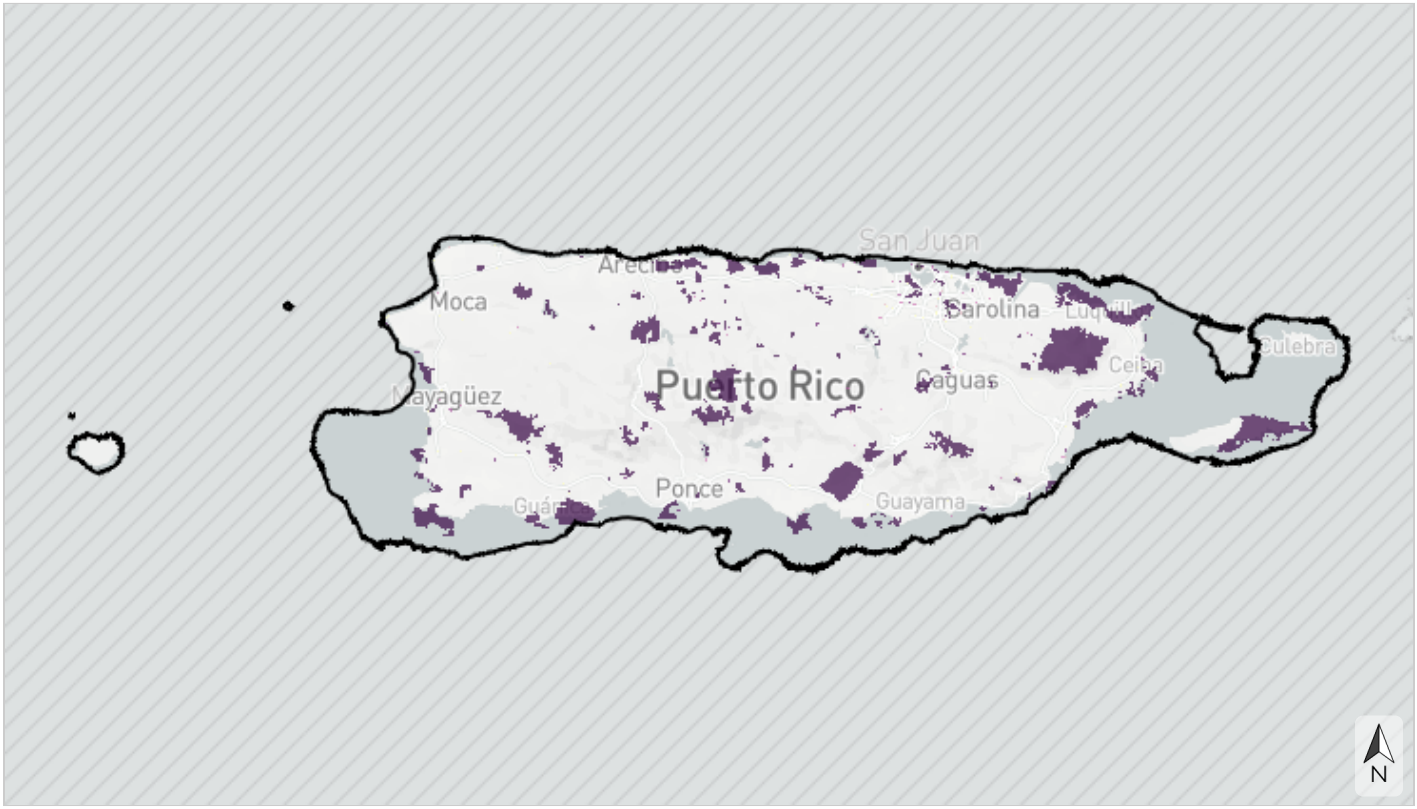
	Indicator Values	Acres	Percent of Area
↑ High	Highest reforestation potential (coffee production in watershed with reservoir)	8,362	0.3%
	Very high reforestation potential (other coffee production)	18,167	0.6%
	High reforestation potential (open space in developed area, pasture, or crops in watershed with reservoir)	9,756	0.3%
	Medium reforestation potential (other open space in developed area, pasture, or crops)	157,403	5.3%
↓ Low	Low reforestation potential (already natural or developed)	2,283,633	76.4%
	Area not evaluated for this indicator	*510,307*	*17.1%*
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Terrestrial

Caribbean urban park size

This cultural resource indicator measures the size of parks and beaches in the urban environment in the U.S. Caribbean. Protected natural areas in urban environments provide urban residents a nearby place to connect with nature, and offer refugia for some species. All beaches in this region are open to the public. This indicator uses several protected areas and beach datasets (e.g., the Protected Areas Database of the United States, OpenStreetMap) and Census urban areas.



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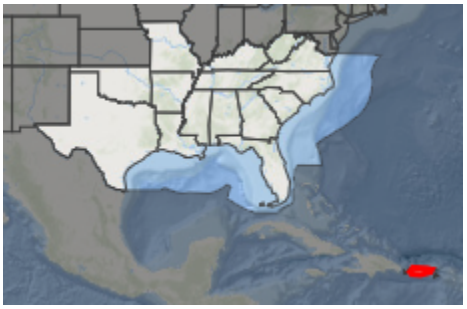


- 75+ acre urban park
- 50 to <75 acre urban park
- 30 to <50 acre urban park
- 10 to <30 acre urban park
- 5 to <10 acre urban park
- <5 acre urban park
- Not identified as an urban park

Table 14: Indicator values for Caribbean urban park size within Puerto Rico. A good condition threshold is not yet defined for this indicator.

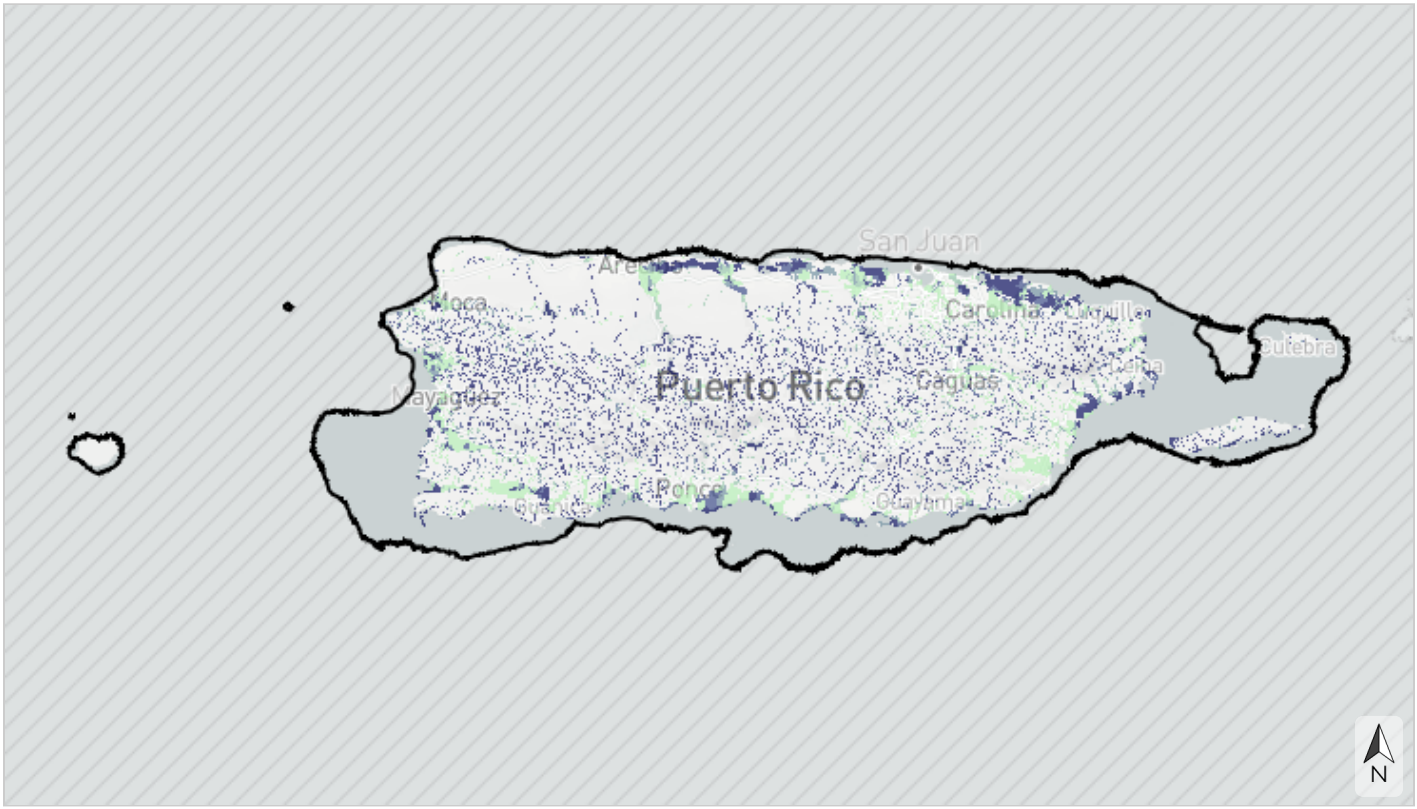
	Indicator Values	Acres	Percent of Area
↑ High	75+ acre urban park	223,425	7.5%
	50 to <75 acre urban park	1,734	<0.1%
	30 to <50 acre urban park	921	<0.1%
	10 to <30 acre urban park	1,381	<0.1%
	5 to <10 acre urban park	999	<0.1%
	<5 acre urban park	3,320	0.1%
↓ Low	Not identified as an urban park	2,755,849	92.2%
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Freshwater

Caribbean natural landcover in floodplains

This indicator measures the amount of natural landcover in the estimated floodplain of rivers and streams within each catchment in the U.S. Caribbean. 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) in the floodplain. 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 LANDFIRE land cover. It applies to the floodplain predicted to be inundated by a 100-year flood (also known as the 1% annual chance flood), derived from the Federal Emergency Management Agency's National Flood Hazard Layer, and buffered flowlines representing other streams.



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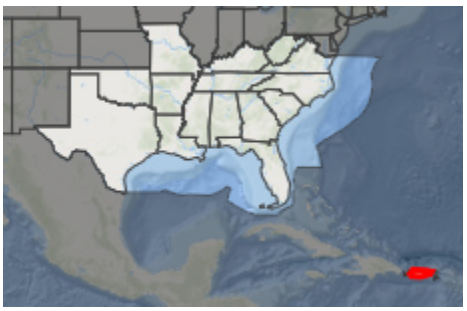


Percent natural landcover within the estimated floodplain, by catchment

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

Table 15: Indicator values for Caribbean natural landcover in floodplains within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values: Percent natural landcover within the estimated floodplain, by catchment	Acres	Percent of Area	
↑ High	>90% natural landcover	191,555	6.4%	
	>80-90% natural landcover	73,761	2.5%	↑ In good condition
	>70-80% natural landcover	55,563	1.9%	↓ Not in good condition
	>60-70% natural landcover	39,903	1.3%	
	≤60% natural landcover	121,836	4.1%	
↓ Low	Not identified as a floodplain	1,708,641	57.2%	
	Area not evaluated for this indicator	*796,370*	*26.7%*	
	Total area	**2,987,629**	**100%**	

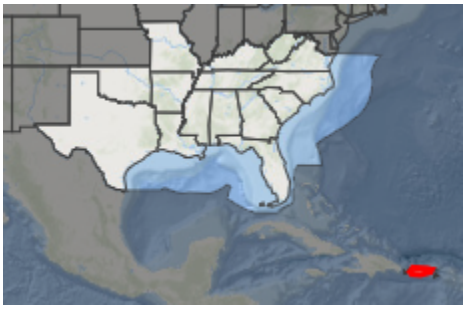
To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Freshwater

Caribbean network complexity

This indicator depicts the number of connected stream size classes in a river network between dams or waterfalls in the U.S. Caribbean. 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. It applies to the estimated floodplain, which spatially defines areas predicted to be inundated by a 100-year flood (also known as the 1% annual chance flood), based on the Federal Emergency Management Agency's National Flood Hazard Layer, and buffered flowlines representing other streams.

18 35 70 miles



Number of connected stream size classes

- 4 size classes
- 3 size classes
- 2 size classes
- 1 size class
- Not identified as floodplain

Table 16: Indicator values for Caribbean network complexity within Puerto Rico. A good condition threshold is not yet defined for this indicator.

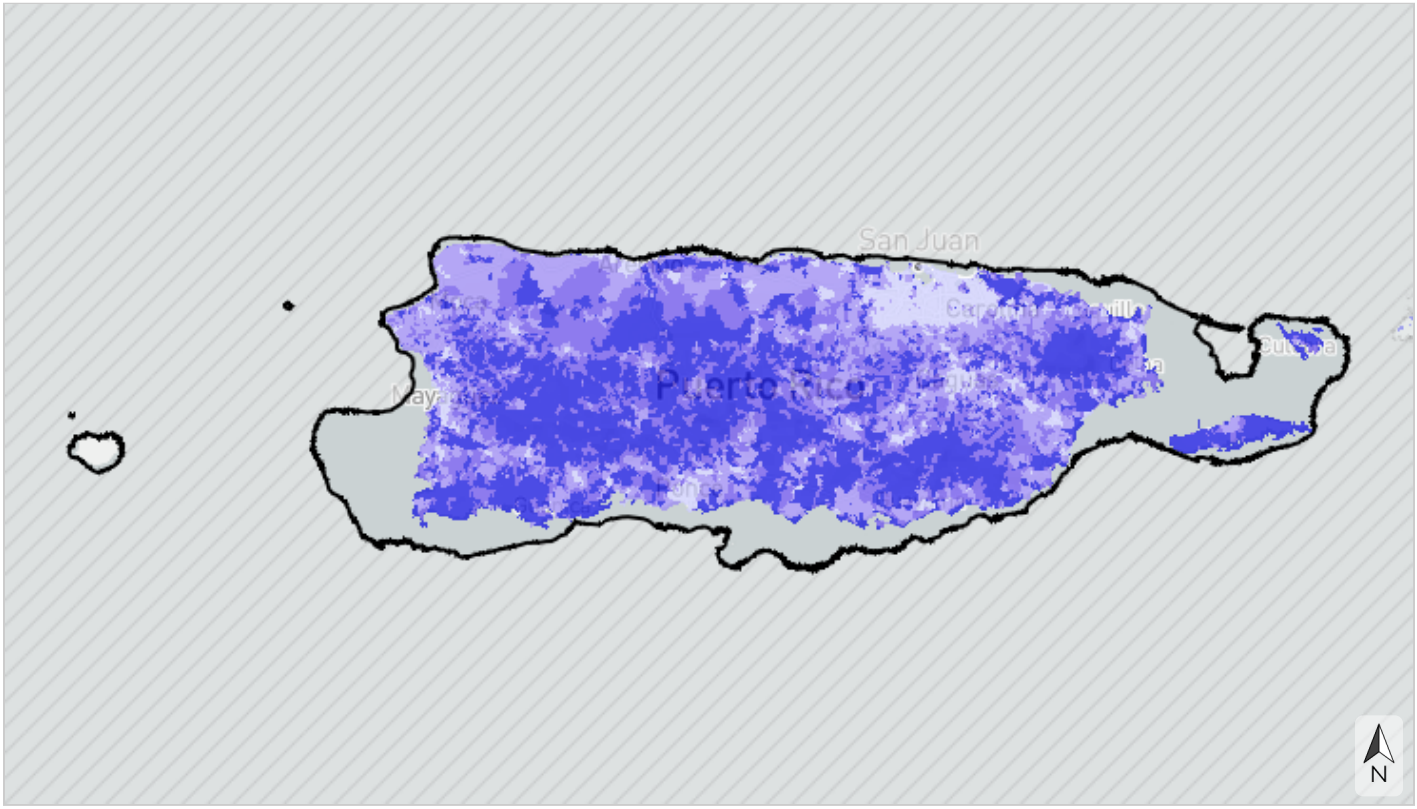
	Indicator Values: Number of connected stream size classes	Acres	Percent of Area
↑ High	4 size classes	44,503	1.5%
	3 size classes	148,701	5.0%
	2 size classes	196,492	6.6%
	1 size class	91,961	3.1%
↓ Low	Not identified as floodplain	1,709,601	57.2%
	Area not evaluated for this indicator	*796,370*	*26.7%*
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Freshwater

Caribbean permeable surface

This indicator measures the average percent of non-impervious cover within each catchment in the U.S. Caribbean. 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. It originates from the National Oceanic and Atmospheric Administration's Coastal Change Analysis Program landcover.



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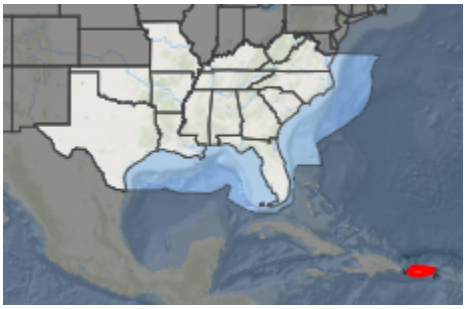


Percent of catchment or small island permeable

- >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 17: Indicator values for Caribbean permeable surface within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

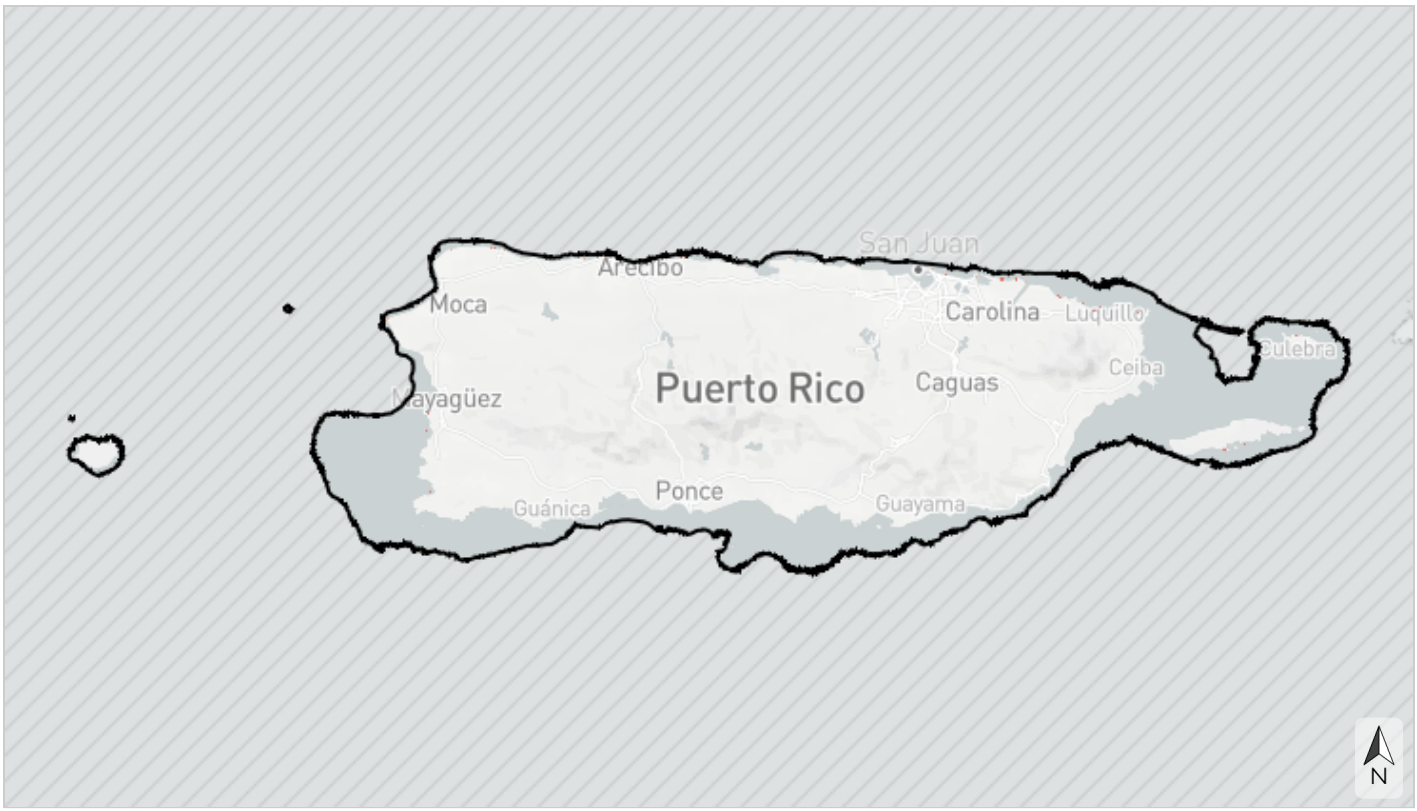
	Indicator Values: Percent of catchment or small island permeable	Acres	Percent of Area	
↑ High	>95% permeable (likely high water quality and supporting most sensitive aquatic species)	899,665	30.1%	↑ In good condition
	>90-95% permeable (likely declining water quality and supporting most aquatic species)	579,701	19.4%	↓ Not in good condition
	>70-90% permeable (likely degraded water quality and not supporting many aquatic species)	563,966	18.9%	
↓ Low	≤70% permeable (likely degraded instream flow, water quality, and aquatic species communities)	152,592	5.1%	
	Area not evaluated for this indicator	*791,705*	*26.5%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Coastal & marine

Caribbean beach habitat

This indicator evaluates beach habitat for six species of birds and sea turtles that nest on beaches in the U.S. Caribbean (Wilson's plover, American oystercatcher, and hawksbill, leatherback, green, and loggerhead sea turtles). It includes beach locations, sea turtle nest observations, and predicted suitable habitat for birds and sea turtles. Beaches, especially those known to support beach-nesting species, are particularly important habitats due to their limited spatial extent and vulnerability to development and sea-level rise. This indicator combines multiple datasets from the Gap Analysis Program, State of the World's Sea Turtles, OpenStreetMap, and more.



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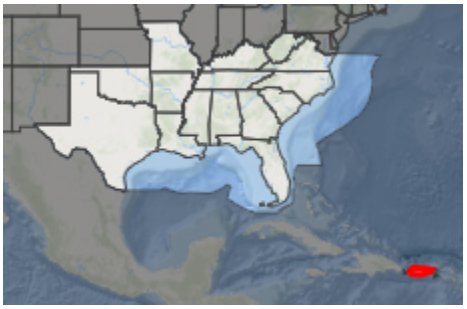
18 35 70 miles



Beach with 1+ nesting species predicted or observed

Other beach

Not identified as a beach

Table 18: Indicator values for Caribbean beach habitat within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values	Acres	Percent of Area	
↑ High	Beach with 1+ nesting species predicted or observed	1,791	<0.1%	↑ In good condition
	Other beach	2,149	<0.1%	↓ Not in good condition
↓ Low	Not identified as a beach	2,983,689	99.9%	
	Total area	**2,987,629**	**100%**	

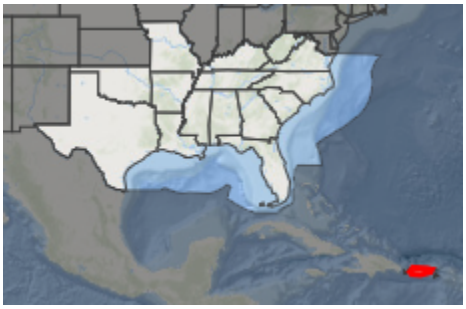
To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Coastal & marine

Caribbean coastal shoreline condition

This indicator assesses shoreline alteration based on the presence of hardened structures like seawalls, groins, and riprap at the dynamic interface between land and water along the U.S. Caribbean coast. 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. This indicator originates from the National Oceanic and Atmospheric Administration's Continuously Updated Shoreline Product.

70 miles
18 35



Natural
Armored

Table 19: Indicator values for Caribbean coastal shoreline condition within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

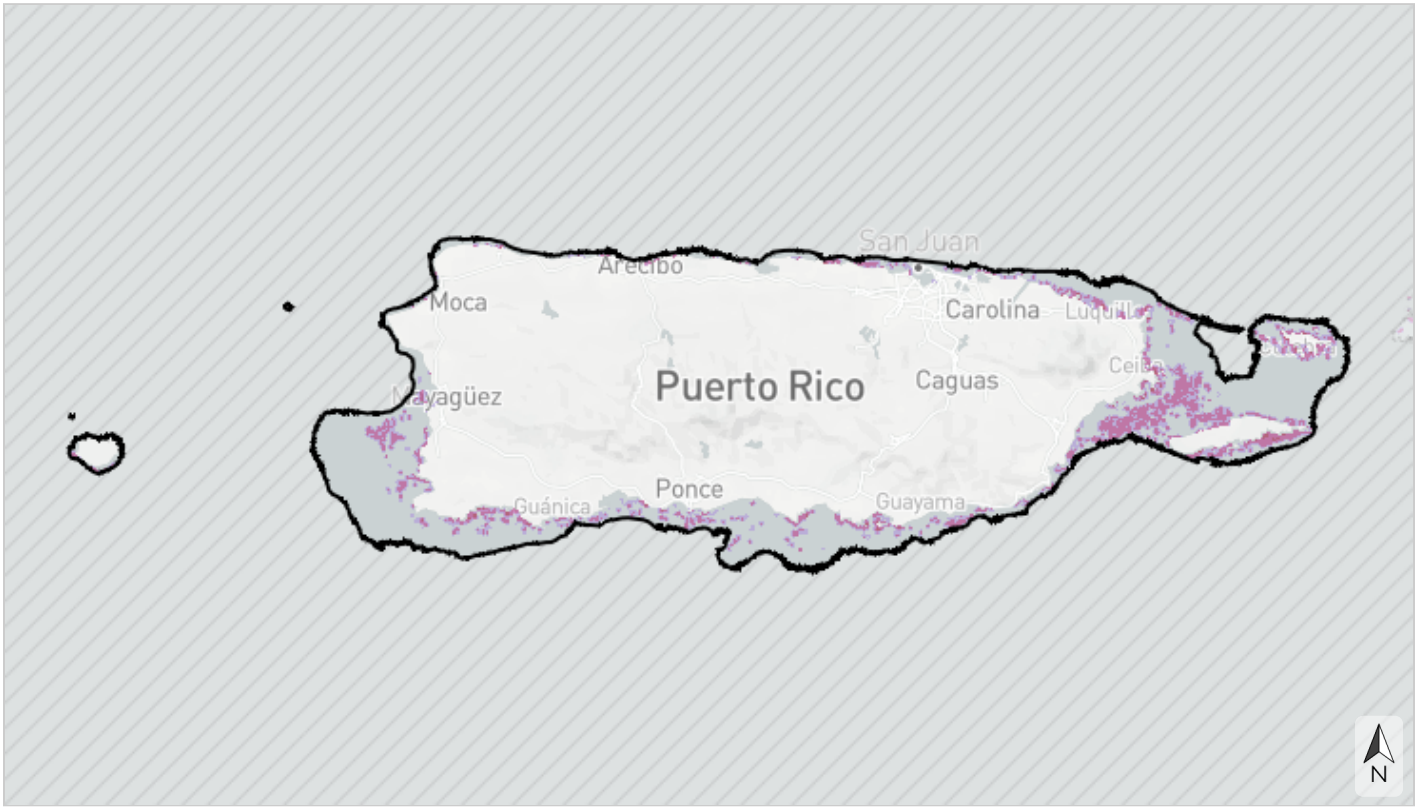
	Indicator Values	Acres	Percent of Area	
↑ High	Natural	20,502	0.7%	↑ In good condition
↓ Low	Armored	1,081	<0.1%	↓ Not in good condition
	Area not evaluated for this indicator	*2,966,047*	*99.3%*	
	Total area	**2,987,629**	**100%**	

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

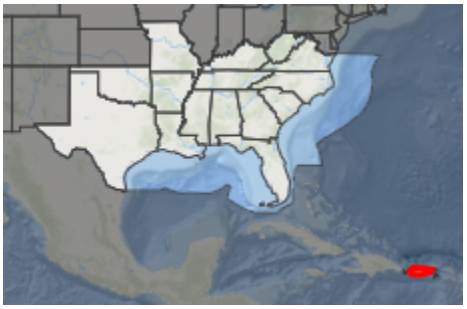
Coastal & marine

Caribbean fish hotspots

This indicator represents areas of high predicted fish density and diversity in the U.S. Caribbean based on the presence of mangroves, seagrass, and coral in close proximity to one another. Many marine and estuarine fish species use mangroves, seagrass, and coral during different life stages or activities. These habitats provide nursery areas, foraging opportunities, shelter, and protection from predators. This indicator draws from research in Puerto Rico that examines fish density and the number of fish species present at different distances from various habitat types (Pittman et al. 2007). It uses benthic habitat data from The Nature Conservancy and landcover from the National Oceanic and Atmospheric Administration's Coastal Change Analysis Program.



18 35 70 miles



Level of predicted fish density and diversity

- Highest density/diversity (mangrove, coral, and dense seagrass all present within 300 m)
- Very high density/diversity (either mangrove and coral, mangrove and dense seagrass, or coral and dense seagrass present within 300 m)
- High density/diversity (mangrove, coral, and dense seagrass all present within 600 m)
- Medium density/diversity (either mangrove and coral, mangrove and dense seagrass, or coral and dense seagrass present within 600 m)
- Low density/diversity (no coral, mangrove, or dense seagrass present within 600 m of one other)

Table 20: Indicator values for Caribbean fish hotspots within Puerto Rico. A good condition threshold is not yet defined for this indicator.

	Indicator Values: Level of predicted fish density and diversity	Acres	Percent of Area
↑ High	Highest density/diversity (mangrove, coral, and dense seagrass all present within 300 m)	3,275	0.1%
	Very high density/diversity (either mangrove and coral, mangrove and dense seagrass, or coral and dense seagrass present within 300 m)	88,282	3.0%
	High density/diversity (mangrove, coral, and dense seagrass all present within 600 m)	5,742	0.2%
	Medium density/diversity (either mangrove and coral, mangrove and dense seagrass, or coral and dense seagrass present within 600 m)	98,888	3.3%
↓ Low	Low density/diversity (no coral, mangrove, or dense seagrass present within 600 m of one other)	586,416	19.6%
	Area not evaluated for this indicator	*2,205,027*	*73.8%*
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Coastal & marine

Caribbean fish nursery habitat

This indicator represents nursery and spawning habitat or other concentration areas for fish in the U.S. Caribbean. It captures places like mangrove lagoons, bays, estuaries, and some coral reefs. These areas serve as important nursery habitat for many fish species including snook, tarpon, snapper, great barracuda, grunt, mojarra, mullet, jack, bonefish, and more. This data originates from the National Oceanic and Atmospheric Administration's Environmental Sensitivity Index.

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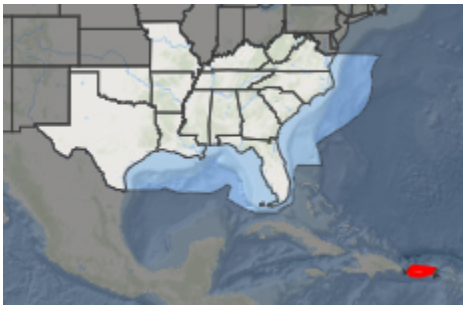
70 miles
18 35



Fish spawning, nursery, or other concentration area

Not identified as a fish spawning, nursery, or other concentration area

Table 21: Indicator values for Caribbean fish nursery habitat within Puerto Rico. A good condition threshold is not yet defined for this indicator.

	Indicator Values	Acres	Percent of Area
↑ High	Fish spawning, nursery, or other concentration area	58,216	1.9%
↓ Low	Not identified as a fish spawning, nursery, or other concentration area	2,929,413	98.1%
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Coastal & marine

Caribbean seagrass

This indicator represents the presence and density of seagrass at various depths in the U.S. Caribbean. Seagrasses provide food and habitat for a range of marine and estuarine wildlife. They also produce oxygen, filter water, sequester carbon, 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 uses benthic habitat data from The Nature Conservancy and bathymetry data from the National Oceanic and Atmospheric Administration.

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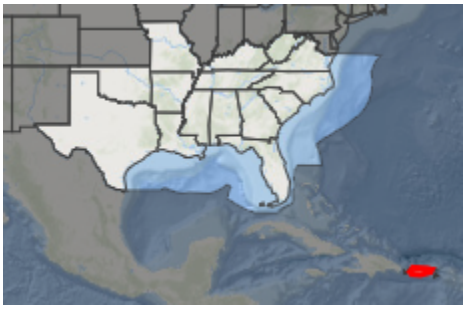
18 35 70 miles



- Very shallow and dense seagrass
- Very shallow and sparse seagrass
- Shallow and dense seagrass
- Shallow and sparse seagrass
- Deep and dense seagrass
- Deep and sparse seagrass
- Not seagrass

Table 22: Indicator values for Caribbean seagrass within Puerto Rico. A good condition threshold is not yet defined for this indicator.

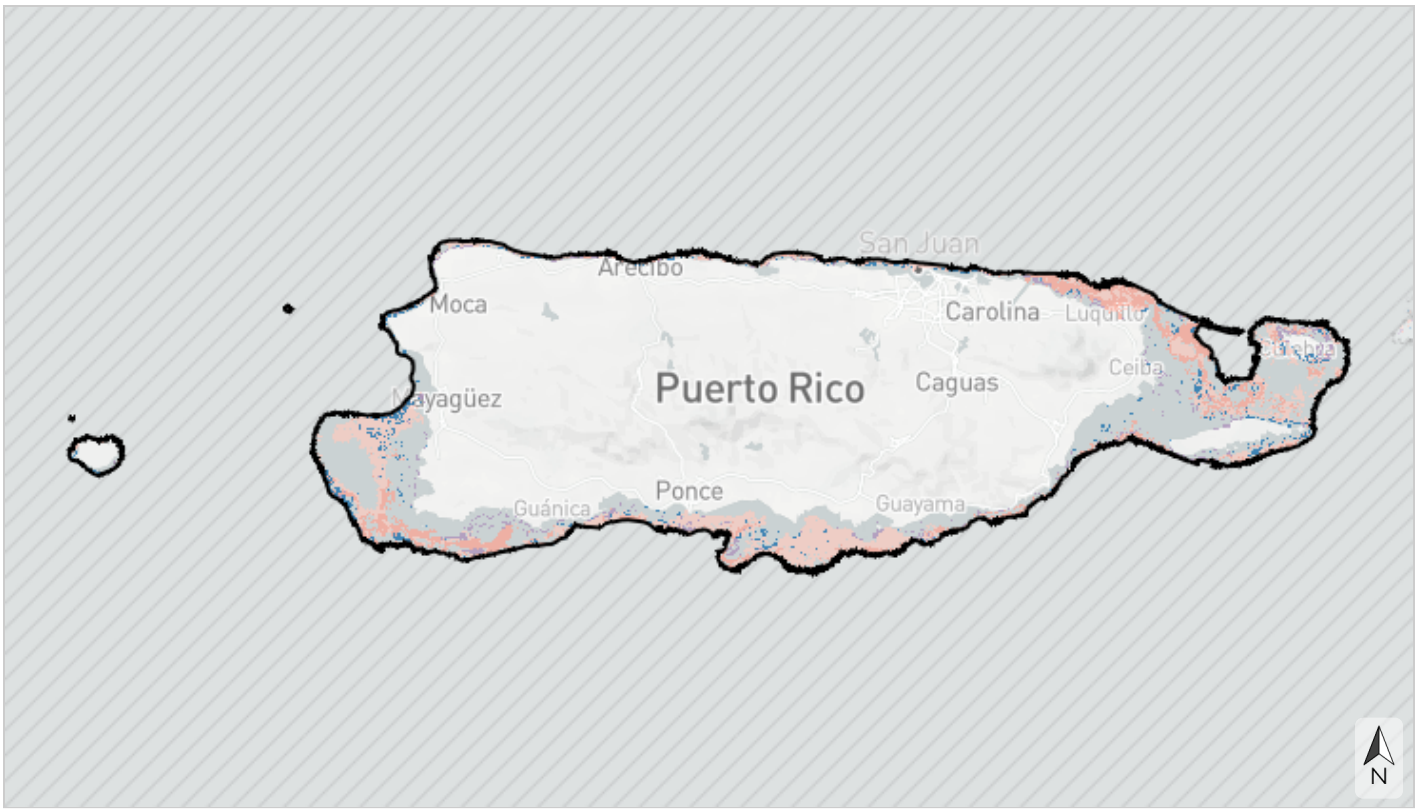
	Indicator Values	Acres	Percent of Area
↑ High	Very shallow and dense seagrass	10,434	0.3%
	Very shallow and sparse seagrass	7,843	0.3%
	Shallow and dense seagrass	21,994	0.7%
	Shallow and sparse seagrass	19,219	0.6%
	Deep and dense seagrass	30,266	1.0%
	Deep and sparse seagrass	7,075	0.2%
↓ Low	Not seagrass	685,772	23.0%
	Area not evaluated for this indicator	*2,205,027*	*73.8%*
	Total area	**2,987,629**	**100%**

To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

Coastal & marine

Caribbean shallow hardbottom and coral

This indicator measures the presence of hardbottom habitat and coral in the U.S. Caribbean. It also predicts the ability of coral to survive the impacts of climate change based on reef locations, past and future thermal conditions, hurricane impacts, and coral larval connectivity. Hardbottom and coral serve as important habitat for many marine species and provide economic and cultural benefits to nearby coastal communities, such as supporting fisheries, filtering seawater, and buffering the impacts of storms. This indicator combines benthic habitat and coral climate refugia data from The Nature Conservancy.



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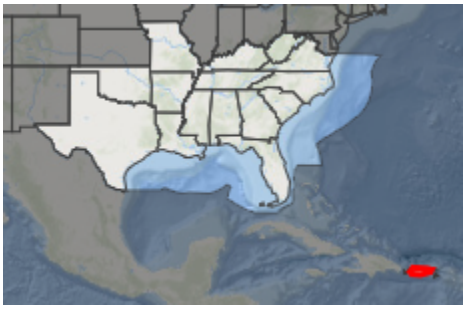


- Coral with above average climate resilience
- Coral with unknown climate resilience
- Coral with below average climate resilience
- Hardbottom with sparse algae
- Hardbottom with dense algae
- Not coral or hardbottom

Table 23: Indicator values for Caribbean shallow hardbottom and coral within Puerto Rico. Good condition thresholds reflect the range of indicator values that occur in healthy, functioning ecosystems.

	Indicator Values	Acres	Percent of Area	
↑ High	Coral with above average climate resilience	33,552	1.1%	
	Coral with unknown climate resilience	3,192	0.1%	
	Coral with below average climate resilience	30,849	1.0%	↑ In good condition
	Hardbottom with sparse algae	110,172	3.7%	↓ Not in good condition
	Hardbottom with dense algae	175,920	5.9%	
↓ Low	Not coral or hardbottom	428,917	14.4%	
	Area not evaluated for this indicator	*2,205,027*	*73.8%*	
	Total area	**2,987,629**	**100%**	

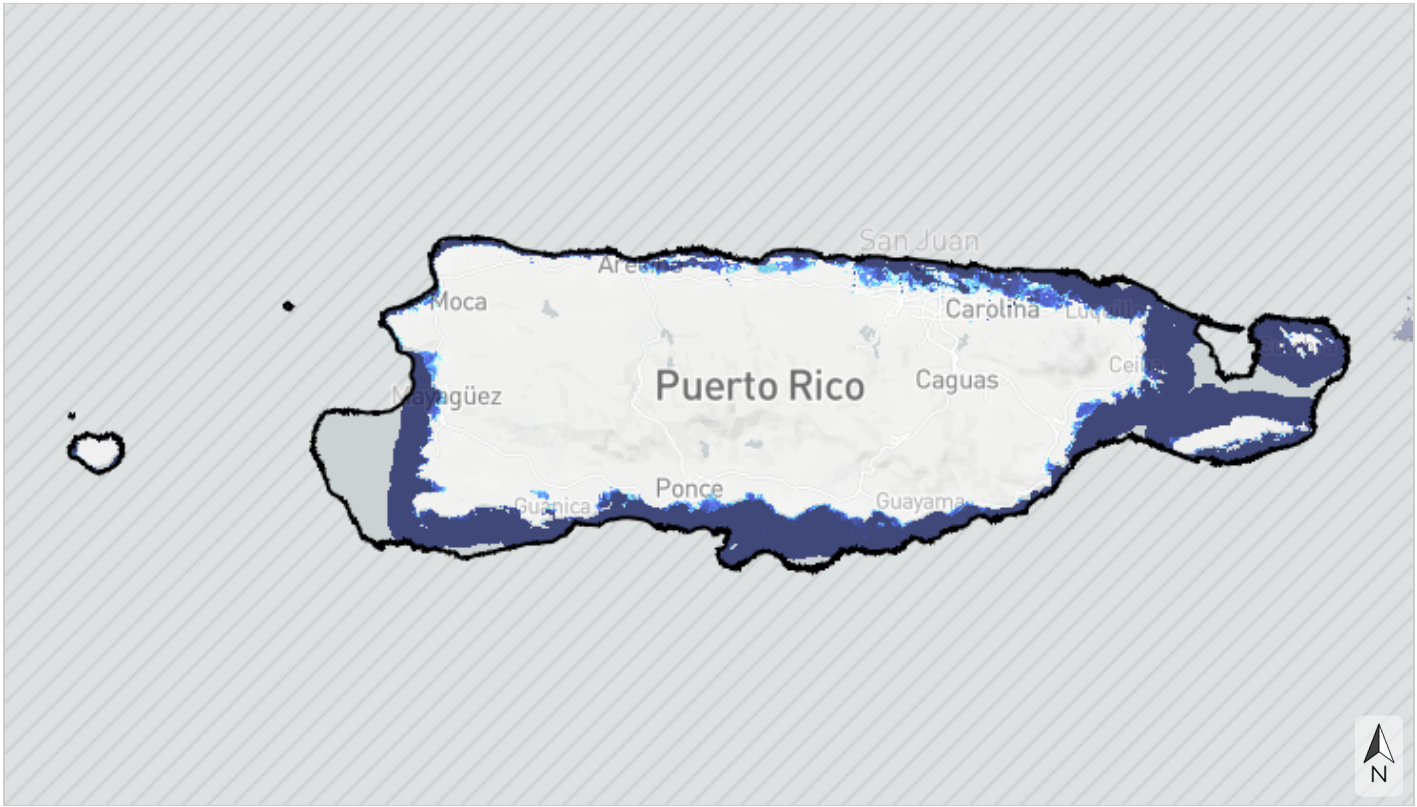
To learn more and explore the GIS data, view this indicator in the SECAS Atlas.

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.



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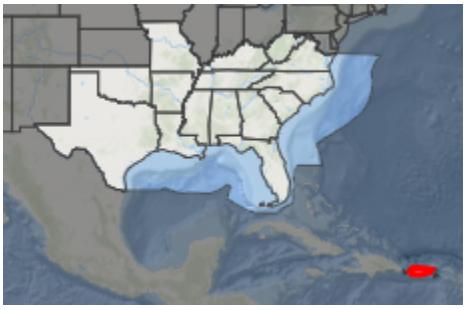
18 35 70 miles



Flooding extent by projected sea-level rise (ft)

0 1 2 3 4 5 6 7 8 9 10

Table 24: Extent of flooding by projected average highest daily tide due to sea level rise within Puerto Rico. Values from the NOAA sea-level rise inundation data.

Feet of sea-level rise	Acres	Percent of Area
0 feet	631,826	21.1%
1 foot	654,011	21.9%
2 feet	669,226	22.4%
3 feet	680,987	22.8%
4 feet	692,743	23.2%
5 feet	705,508	23.6%
6 feet	716,194	24.0%
7 feet	727,122	24.3%
8 feet	738,087	24.7%
9 feet	747,256	25.0%
10 feet	755,211	25.3%
Not projected to be inundated by up to 10 feet	*2,074,729*	*69.4%*
Sea-level rise data unavailable	*157,689*	*5.3%*
Total area	**2,987,629**	**100%**

Table 25: Projected sea level rise by decade within Puerto Rico. 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.

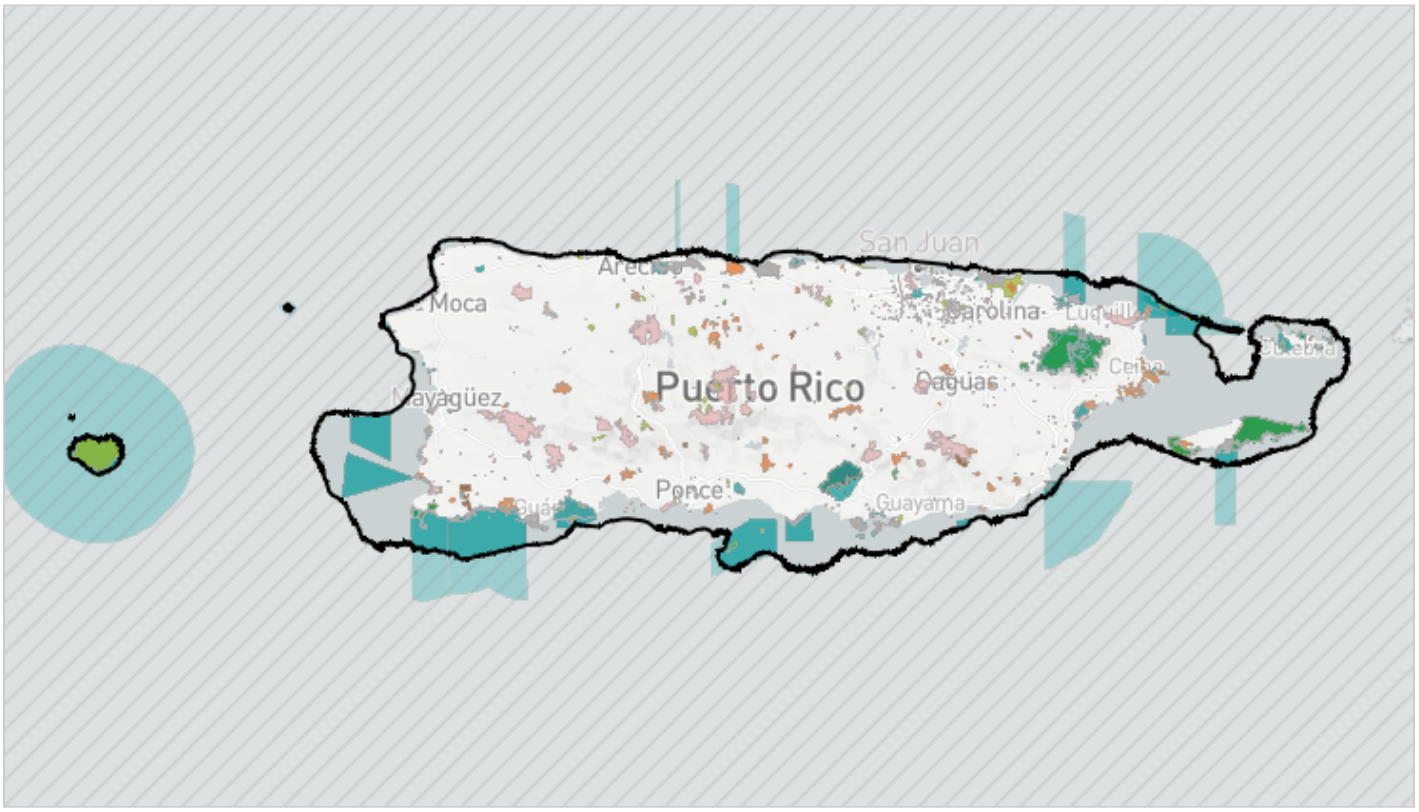
SLR Scenario	2020 (ft)	2030 (ft)	2040 (ft)	2050 (ft)	2060 (ft)	2070 (ft)	2080 (ft)	2090 (ft)	2100 (ft)
Low	0.23	0.36	0.49	0.62	0.75	0.88	0.98	1.1	1.2
Intermediate-low	0.26	0.41	0.59	0.77	0.98	1.2	1.4	1.6	1.8
Intermediate	0.26	0.43	0.62	0.89	1.2	1.6	2	2.6	3.4
Intermediate-high	0.26	0.46	0.72	1.1	1.6	2.4	3.2	4	5
High	0.26	0.49	0.82	1.3	2.1	3.1	4.2	5.5	6.8

Urban growth

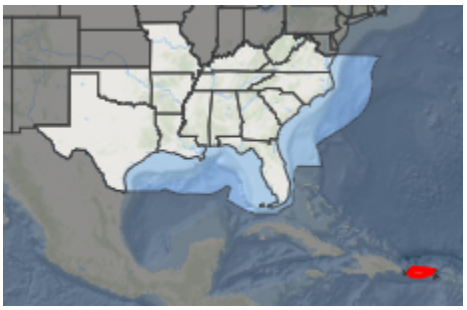
Projected future urbanization data is not currently available for this area.

Ownership and Partners

Conserved lands ownership



18 35 70 miles



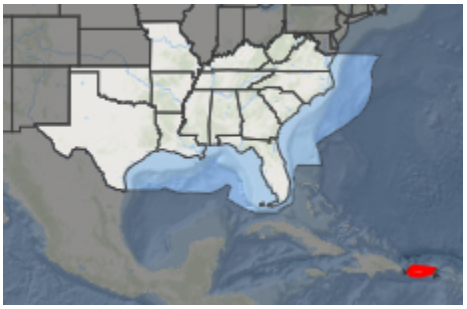
- Federal
- State/province
- Territorial
- Regional
- Local
- Joint
- Private non-profit conserved lands
- Private conservation land
- Tribal
- Designation
- Ownership unknown

Table 26: Extent of ownership class within Puerto Rico. 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.

Ownership	Acres	Percent of Area
Federal	71,617	2.4%
State/province	25,119	0.8%
Local	68	<0.1%
Joint	93,816	3.1%
Private non-profit conserved lands	26,280	0.9%
Private conservation land	10,568	0.4%
Designation	321,467	10.8%
Ownership unknown	4,439	0.1%

Land protection status

70 miles
18 35



- 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 27: Extent of land protection status within Puerto Rico. 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.

Land Protection Status	Acres	Percent of Area
Managed for biodiversity (disturbance events proceed or are mimicked)	29,829	1.0%
Managed for biodiversity (disturbance events suppressed)	410,469	13.7%
Managed for multiple uses (subject to extractive uses such as mining or logging, or OHV use)	86,267	2.9%
No known mandate for biodiversity protection	26,809	0.9%

Protected Areas

- La Parguera Natural Reserve (Unknown; 39,971 acres)
- El Yunque National Forest (USDA FOREST SERVICE; 28,794 acres)
- Luquillo (Unknown owner; 28,480 acres)
- Caja de Muertos Natural Reserve (Unknown; 24,750 acres)
- Punta Guaniquilla Natural Reserve (Unknown; 19,795 acres)
- Isla de Mona Natural Reserve (Unknown; 18,730 acres)
- Arrecifes de Tourmaline Natural Reserve (Unknown; 17,961 acres)
- Vieques National Wildlife Refuge (Unknown; 17,500 acres)
- Vieques National Wildlife Refuge (Fee; 17,500 acres)
- VIEQUES NATIONAL WILDLIFE REFUGE (Fee; 17,500 acres)
- Bosque Natural de Boquerón Natural Reserve (Unknown; 17,255 acres)
- Reserva Natural de Isla de Mona y Monito (Dominio público; 14,048 acres)
- Arrecifes de la Cordillera Natural Reserve (Unknown; 13,487 acres)
- NG MTA Camp Santiago (Unknown owner; 12,649 acres)
- Bosque Estatal de Guánica Natural Reserve (Unknown; 12,633 acres)
- El Toro Area (Unknown owner; 12,584 acres)
- Mameyes Area (Unknown owner; 11,150 acres)
- El Toro Wilderness (Unknown owner; 10,412 acres)
- Bosque Estatal de Maricao (terrenos públicos y privados; 9,875 acres)
- Cabezas de San Juan Natural Reserve (Unknown; 9,853 acres)
- Bosque Estatal de Guánica (terrenos públicos y privados; 9,152 acres)
- Punta Petrona Natural Reserve (Unknown; 8,040 acres)
- Río Espíritu Santo Natural Reserve (Unknown; 7,955 acres)
- Servidumbre Escénica Montes Oscuros (terrenos privados; 7,554 acres)
- Bosque Estatal de Toro Negro (terrenos públicos y privados; 6,805 acres)

Credits

This report was generated by the Southeast Conservation Blueprint Explorer, which was developed by Astute Spruce, LLC in partnership with the U.S. Fish and Wildlife Service under the Southeast Conservation Adaptation Strategy.

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.