NEW JERSEY CONSERVATION BLUEPRINT

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Note for Blueprint Plus users:

This document describes the data and the process used to create the Conservation Blueprint Ecosystems model. The model was originally created using a raster approach, in which land is evaluated without reference to parcel boundaries. In Blueprint Plus, the models are used to evaluate land at the parcel level. Although *Blueprint Plus uses the same data and the same scoring system as the raster model*, where necessary, some of the processing steps described here were modified to facilitate the application of the raster model to parcels.

(Version 3.0 – priority layer updated February, 2020)

Map found online at www.njblueprint.org

Ecosystems to Protect Priority Layer Overview

The goal is for organizations to use this model to prioritize and accelerate their land acquisition efforts in NJ around a shared set of priorities. As a Steering Committee, we discussed the key datasets and indicators that help identify the most important ecological lands in New Jersey.

As a group, we discussed dozens of different indicators at several meetings. We then reviewed these indicators and refined the ranking and methods in a smaller group identified as the Science Advisory Committee. The rankings were completed using 30 meter raster cells across the entire state of New Jersey. The result was wall-to-wall ranking coverage. This means that properties that are developed or protected are still ranked. For properties that are developed, those properties may contain additional lands (i.e. one dwelling on an ecologically important 100-acre property) that rank high ecologically and are important for land protection. For properties that are protected, we decided to rank these areas because there is utility in viewing ecologically important lands across the landscape. This could help with developing land acquisition strategies by seeing possible connections/additions to existing protected lands that also rank high ecologically. It's also worth noting that there is current work being done on a comprehensive protected lands layer for NJ. That work is not yet completed.

We decided to use publicly available data. If a data need was identified, we flagged it and assessed the need and feasibility in developing that data. An example is a statewide trails layer. The need was highlighted in our Steering Committee discussions. We shared that need with the New Jersey Geospatial Forum and a Task Force was developed (work currently underway) to develop the methodology to produce a comprehensive statewide trails layer.

Priority Model Components (Total of 40 possible points)

4 Broad Rankings categories:	
Water	10 points
Rare Species and Natural Communities	10 points
Climate Change Resilience	10 points
Habitat Connectivity	10 points
TOTAL POSSIBLE POINTS	**40 points**

Developing the Current Model

Overall, the suggested ecological indicators fell into four broad categories (though each category has plenty of overlap with the other three categories):

1. **Water**
2. **Rare species and Natural Communities**
3. **Climate change resilience**
4. **Habitat Connectivity**

The 4 broad categories were ranked differently in terms of the number of inputs and the scoring used. The input and scoring methods for each category are described in detail below. The number of possible total points per category ranged from 5 (Rare Species & Natural Communities) to 9 (Climate change resilience). Each category was then rescaled to a 1-10 scoring rubric and the 4 categories were summed. Therefore, the highest possible score was 40 points, and the lowest score was 0 points. Although no area scored above 37 (and there was a significant drop in the amount of raster cells with a ranking above the score of 34), partly because some of the inputs are usually not present in the same area (i.e. areas containing wetlands typically have low groundwater recharge). As noted below, areas containing agriculture and urban land use coverage were deducted one point from the rankings. Agricultural lands are ranked in a completely independent Blueprint Agricultural model. Urban lands are developed areas and that was the way we recognized developed lands in the rankings. Note:

We plan to update the Blueprint ecological rankings on an annual or biennial basis as new data is released or existing data is updated.

NJDEP Land Use/Land Cover data was used in several rankings below. The minimum mapping unit for this data is one acre for all features, except a minimum width of 30’ was required for linear water features.

Explanation of Datasets Incorporated into Point System / Priority Model

Here are detailed breakdowns of the 4 large ranking categories:

Components	Ranking Criteria	Ranking Points
Headwaters		
	Presence of headwaters	2
Floodplains		
	Presence of floodplain	2
Impervious Surface		
	>25% (most impervious)	0
	10-25%	0.25
	5-10%	0.5
	0-5% (least impervious)	1
Groundwater Recharge		
	0-5 inches/year (least recharge)	0
	6-11 inches/yr.	0.25
	12-14 inches/yr.	0.5
	15-17 inches/yr.	0.75
	18-24 inches/yr. (highest recharge)	1
Wetlands		
	Presence of wetlands	1

Total possible points = 7 // Rescale to 10 to match other Ranking groups

s noted below, points were deducted for agricultural and urban lands statewide (1 point for each).

Our goal was to holistically capture indicators of water and watershed health. We started with two factors that play a disproportionately important role in the health of watersheds- headwaters and floodplains. Additional indicators included percent impervious surface, groundwater recharge, as well as the presence of wetlands. Scores were set up in a way that indicators of excellent ecological condition are the high scores while areas in poor ecological condition get no score or a low score.

Headwaters

We identified headwater areas by linking 1st order streams to catchments using the National Hydrography Dataset - NHDPlus (Version 2). NHDPlus is a dataset developed by the U.S. EPA Office of Water, with assistance from the U.S. Geologic Survey.

The catchments containing 1st order streams are the areas delineated and ranked as headwaters. There are many more streams than catchments and many streams cross multiple catchments. A 1st order stream may flow through a small area of many catchments. To address this, we identified the primary catchment associated with each 1st order stream. This was done using a one to many spatial join in ArcGIS vers. 10.3. The datasets (1st order streams and catchments) were accessed in shapefile format. After linking 1st order streams to catchments, the resulting data layer was converted to a 30m raster.

Ranking:
Presence of Headwater Areas = 2 points

Data link:
NHDPlus (Version2) data, including tutorials, background, and detailed metadata:
http://www.horizon-systems.com/nhdplus/NHDPLUSV2_home.php
The NHDPlus Version 2, released in 2012, was used because it's an improved dataset that's a standardly used stream layer with a high level of accuracy. There are significant improvements in stream mapping and classification in Version 2. These basins also have a finer resolution than HUC14 units and were deemed most appropriate for this analysis.

In an earlier version, headwaters were ranked using land use data (NJDEP, 2012). Headwaters in natural cover ranked higher than headwaters in grassland or agriculture. As noted below, floodplains were ranked in a similar way. Determining the relative value of headwaters (or floodplains) in different land use coverages was difficult and we removed the link to land use. Instead, **ranking points were deducted for agriculture and for urban statewide.** This was an attempt to prioritize lands in natural cover across the state.

Floodplains

To identify floodplains, we used the Active River Area (ARA) conservation framework developed by The Nature Conservancy. The ARA is a holistic approach to floodplain delineation that includes the channel and the adjacent riparian lands that interact with the river as part of a dynamic system. Natural river/stream processes are identified as part of the framework, and ARA components are identified (e.g. riparian wetlands, terraces, material contribution areas, etc.). The ARA dataset was accessed in shapefile format and converted to a 30m raster.

Ranking:
Presence of Floodplain Areas = 2 points

Data links:
Report link:
The Active River Area: A Conservation Framework for Protecting Rivers and Streams (2008)
https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/Documents/ED_freshwater_ARA_NE2008.pdf

Data link:
https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/freshwater/floodplains/Pages/default.aspx
Ranked points were deducted for agriculture and for urban statewide. This was an attempt to prioritize lands in natural cover across the state. Urban lands are developed and not ecologically significant. Agricultural lands are captured in the agriculture model that is part of the Lands Conservation Blueprint. This was the only instance where points were deducted. The NJDEP Land Use/Land Cover data was accessed in shapefile format and converted to a 30m raster.

Impervious surface

We used impervious coverage mapping from an NJDEP dataset and determined the percentage of average impervious surface for each NHD catchment. As with headwaters (above), catchments were identified via the National Hydrography Dataset - NHDPlus (Version 2). NHDPlus is a dataset developed by the U.S. EPA Office of Water, with assistance from the U.S. Geologic Survey. Impervious coverage was mapped using software that analyzed several datasets, including digital imagery, LiDAR data, and land use/land cover. NJDEP Bureau of GIS staff worked with Applied Geographics and the Spatial Analysis Lab of the University of Vermont to complete the dataset. The data relied on 2015 aerial imagery and was released in 09-2018.

The datasets (impervious surface and catchments) were accessed in shapefile format. The land use data was then linked to the catchments using the Identity tool in ArcGIS. The impervious surface percentage values were summed for each catchment and then divided by the size of the catchment to calculate percentage across differently-sized catchments. The resulting layer was converted to a 30m raster.

Ranking:
>25% (most impervious) = 0 points
10-25% = 0.25 points
5-10% = 0.5 points
0-5% (least impervious) = 1 point

Data links:

Impervious Surface data:

New Jersey Department of Environmental Protection (NJDEP), Division of Information Technology (DOIT), Bureau of Geographic Information Systems (BGIS) Impervious Surface data (released online by county; statewide dataset available by request to BGIS):

https://njogis-newjersey.opendata.arcgis.com/datasets/njdep::atlantic-county-impervious-surface-2015-of new-jersey

(Note: Online impervious surface data is available at the county level. A request to NJDEP BGIS staff is necessary for the statewide dataset.)

NHDPlus Version 2 catchments:

http://www.horizon-systems.com/nhdplus/NHDPLUSV2_home.php

Groundwater recharge

To determine groundwater recharge, we used NJ Geologic and Water Survey's Groundwater Recharge rate data layer. Note that this dataset does not include Hudson and Essex Counties because of the lack of comprehensive current soil survey data for those counties. That's a limitation we accepted since no comparable alternatives were identified. The data was accessed in shapefile format and converted to a 30m raster.

Ranking:
0-5 inches/yr. (least recharge) = 0 points
6-11 inches/yr. = 0.25 points
12-14 inches/yr. = 0.5 points
15-17 inches/yr. = 0.75 points
18-24 inches/yr. (highest recharge) = 1 point

Data link:

NJ Geologic and Water Survey:

http://www.state.nj.us/dep/njgs/geodata/dgs02-3.htm

Wetlands

To determine wetlands, we used the 2015 New Jersey Department of Environmental Protection (NJDEP) Land Use/Land Cover data. Any area containing wetlands (minimum mapping unit for this land use data is 1 acre) was ranked. The data was accessed in shapefile format and converted to a 30m raster.

Ranking: Presence of Wetlands = 1 point

Data link:

Land Use/Land Cover data:

New Jersey Department of Environmental Protection (NJDEP), Office of Information Resource Management (OIRM), Bureau of Geographic Information Systems (BGIS) Land Use/Land Cover 2015 Update https://njogis-newjersey.opendata.arcgis.com/datasets/njdep::land-use-land-cover-of-new-jersey-2015-download

Components	Ranking Criteria	Ranking Points	Scaled to 10
Landscape Version 3.3: Rank			
	LRank 2	1	2
	LRank 3 or 4	3	6
	Lrank 5	5	10
Landcape Version 3.3 # of unique species/patch			
(quantile)	1 unique sp/patch	1	2
	2-3 unique sp/patch	2	4
	4-5 unique sp/patch	3	6
	6-9 unique sp/patch	4	8
	10-40 unique sp/patch	5	10
Vernal Habitat (Landscape V3.3)			
	presence of potential or confirmed vernal habitat	1	2
Natural Heritage Priority Sites			
	Within a Heritage site	3	6
Nature's Network Habitat Condition dataset			
	Bottom 3rd (0-47)	1	2
	Middle 3rd (47-88)	2	4
	Top 3rd (88-200)	3	6

The maximum rank available is 5 points and this was re-scaled to a 1-10 scale to match the other criteria (Freshwater, Resilience, Terrestrial).

NJ Landscape Project (Version 3.3)

To determine important areas for rare species, we utilized data from the NJ Landscape Project. The Landscape Project provides peer-reviewed wildlife habitat mapping for New Jersey and is produced and released by the NJDEP Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP). Version 3.3 was released in 2017. Landscape data was used for rare species habitat patches, the number of unique species identified in each of those patches, and for identification of vernal habitat areas.

The data was accessed in shapefile format and converted to a 30m raster before analytical steps were completed in ArcGIS.
The NJ Landscape Project contains ranks for listed rare species and for species of special concern.

The following excerpt is from the NJ Landscape report (link below):
Rank 2 - assigned to species-specific patches containing one or more occurrences of *species considered to be of special concern.*
Rank 3 – assigned to species-specific habitat patches with one or more occurrences of *State threatened* species.
Rank 4 is assigned to species-specific habitat patches with one or more occurrences of *State endangered* species.
Rank 5 is assigned to species-specific habitat patches with one or more occurrences of wildlife *listed as endangered or threatened pursuant to the Federal Endangered Species Act* of 1973.

Ranking:
Ranking points were given to habitat patches within the different ranks:
Landscape Rank 2 habitat patches = 1 point
Landscape Rank 3 or 4 habitat patches = 3 points
Landscape Rank 5 habitat patches = 5 points

Ranking points were also given to the # of unique species per patch:
1 unique species/patch = 1 point
2-3 unique species/patch = 1 point
4-5 unique species/patch = 1 point
6-9 unique species/patch = 1 point
10-40 unique species/patch = 1 point

Ranking points were also given to vernal habitat identified by the Landscape Project:
Vernal Habitat Area = 1 point
Potential Vernal Habitat Area = 1 point

A project to field verify vernal habitat identified by the Landscape Project was initiated, but not completed for all of the vernal habitat areas identified across NJ. There are both identified vernal areas that may not fully meet the definition, and there are vernal habitat areas that were missed. We decided that potential vernal habitat areas (that were not field verified) would be included with equal weight in the rankings. An area could get one total point for vernal habitat (not two points for having potential and confirmed habitat in the same area).

NJ Landscape Project Data links:

New Jersey Division of Fish and Wildlife. 2017. New Jersey Landscape Project, Version 3.3. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered and Nongame Species Program

Report:
https://www.state.nj.us/dep/fgw/ensp/landscape/lp_report_3_3.pdf

Data link:
https://www.state.nj.us/dep/fgw/ensp/landscape/download.htm

Natural Heritage Sites

The New Jersey Natural Heritage Program identified the most significant natural areas in NJ based on an inventory of rare plant and animal species and representative ecological communities.

Ranking points were given to Natural Heritage Priority Sites:
Area within a Natural Heritage site = 1 point

Data link:

NJ Natural Heritage Program:
http://www.nj.gov/dep/parksandforests/natural/heritage/

Nature's Network Habitat Condition for Imperiled Species

Nature's Network was a robust mapping analysis done for the entire Northeast and many partners (academic, governmental (13 states & USFWS), and non-profit) were involved. The goal of Nature's Network is "to identify the best opportunities for conserving intact habitat, supporting imperiled species, and connecting natural areas across the Northeast region."

The data was accessed in a 30m raster format.

Ranking:
Lowest 1/3 (most degraded habitat)= 1 point
Middle 1/3 – 2 points
Highest 1/3 (most intact habitat) = 3 points

Data link:

http://naturesnetwork.org/

This Nature's Network product ranks areas to identify the most intact habitats that are likely to support rare species and biological diversity. There are a couple intermediate products that help develop this ranking: A list of 'Species of Greatest Conservation Need' and an 'Index of Ecological Integrity.'

Link to data:
https://nalcc.databasin.org/datasets/fe56881af5d44d79934f4503dd438c80

There were concerns about this regional data product not accurately capturing conditions in NJ. To address this, instead of adding the 4 components that make up the Rare Species and Natural Communities ranking, the **maximum rank method** was used. The score from the highest component was used. Therefore, areas with a

high ranking from the Landscape data components will retain that high ranking in the final score. Areas with a lower ranking from the Landscape data may benefit from a higher Nature's Network rank. The regionally produced Nature's Network data will not negatively affect areas identified as important by the Landscape data.

For example, if the highest ranking was a 3 because an area contained a Natural Heritage priority site, that area would get a ranking of 3. The same would be true if the area contained a Landscape Rank of 3 or 4—that area would get a ranking of 3. If the area was ranked 5 for Landscape Rank, but ranked only 1 for the regional Nature's Network data, that area would retain the highest ranking of 5.

Components Ranking Criteria Ranking Points

Resilience
(coastal&terrestrial combined)
Significantly below average 1
Below average 2
Average 3
Above Average 4
Significantly above average 5

Marsh Migration Space
Presence of marsh migration space 2

Terrestrial Connectivity
Presence of Concentrated Flow Areas 2

Total possible points = 9 // Rescale to 10 to match other Ranking groups

Nature

Climate change resilience - Terrestrial

Mark Anderson (TNC) led a team of scientists and developed the "Nature's Stage" approach to quantifying climate change resilience. The goal is to identify areas where species and communities have the most flexibility and ability to move in response to a changing climate. This approach focuses on the physical factors that lay the groundwork for diversity, including landforms, bedrock, soils, and topography. These are collectively called 'geodiversity' or 'enduring features.'

This is an excerpt from TNC's 2016 Resilient Sites for Terrestrial Conservation report:
Note: The report (citation below) is available via: nature.org/resilience

A climate-resilient conservation portfolio includes sites representative of all geophysical settings selected for their microclimatic variation and relative naturalness. We developed methods to identify such a portfolio. First, we mapped geophysical settings across the entire study area including all physical environments that had a distinct biotic expression (e.g. limestone valley, shale slope, coarse sand plain, fine silt floodplain, granite

summit). Second, within each geophysical setting we located sites with relatively more microclimates and that were highly connected by natural cover. We did this using GIS metrics based on the site's landscape diversity and local connectedness. Using information on conservation lands we noted geophysical settings that were underrepresented in current conservation and identified the most resilient places for each setting that could serve as strongholds for diversity both now and into the future.

Full Citation: Anderson, M.G., Barnett, A., Clark, M., Prince, J., Olivero Sheldon, A. and Vickery B. 2016. Resilient and Connected Landscapes for Terrestrial Conservation. The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office. Boston, MA.

Coastal Resilience

The terrestrial data from the above-referenced study covered the entire state and there were known weaknesses in the coastal areas of NJ (flat coastal plain). Therefore, a Northeast *coastal* resilience study was completed in 2017. TNC led the study and mostly governmental partners (7 states along with EPA, USFWS & NOAA) were involved.

The study defined coastal resilience as the ability for a coastal site to maintain ecological functions under multiple scenarios of sea level rise. The migration space available under different sea level rise scenarios was calculated, partly using the NOAA 10m Sea Level Rise Viewer. Migration space represents the ability of a tidal habitat to shift inland in response to being inundated by water as a result of sea level rise. Factors examined included the physical features of landforms, soils, and tidal inundation zones. An overall coastal resilience score was developed.

The coastal data was added in to the rankings and replaced the terrestrial data along the coast. **Therefore, one combined (terrestrial & coastal) resilience layer was used**

Ranking:
Significantly below average resilience compared to all of Eastern North America = 1 point
Below average resilience = 2 points
Average resilience = 3 points
Above average resilience = 4 points
Significantly above average resilience compared to all of Eastern North America = 5 points

Terrestrial Resilience report and data link:
http://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/terrestrial/resilience/resilientland/Pages/default.aspx

Coastal Resilience report and data link:
https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/climate/CoastalResilience/Pages/default.aspx

Marsh Migration space

As part of the above-mentioned coastal resilience study, coastal sites were examined to determine the best opportunities for marshes to move inland in response to sea level rise.

The study estimated migration space for six sea level rise scenarios: 1 to 6 feet.
Relevant excerpt from the study report: *"However, after studying the patterns across all scenarios, we scaled our results to the 6-foot scenario because we wanted to identify sites that were robust to the most extreme events. Many sites have ample migration space up to the 3-foot scenario, but the space quickly decreases or disappears*

with more inundation. In our results, these sites are scored as more vulnerable than sites that continue to have migration space even at 6 feet."

Ranking:
Marsh Migration space needed to accommodate 6 feet of sea-level rise (based on sea level rise) = 2 points

Report and data link:
http://www.easterndivision.s3.amazonaws.com/coastal/Resilient_Coastal_Sites_for_Conservation_NE_Mid_Atlantic.pdf

Components	Ranking Criteria	Ranking Points
CHANJ (Connecting Habitat Across New Jersey)		
	CHANJ Core	10
	CHANJ Stepping Stone	10
	CHANJ Corridors:	
	Corridor gradient 1 (easier movement)	10
	Corridor gradient 2	9
	Corridor gradient 3	8
	Corridor gradient 4	7
	Corridor gradient 5 (more difficult movement)	6
Forest Core		
	Presence of Forest Core	2
	Forest Core Area Index - High Index Value	1
Nature's Network Habitat Connectivity		
	Cores/Connectors	5

Total Possible Points = 18 // Rescale to 10 to match other Ranking groups
(Note: maximum CHANJ ranking points = 10)

Connecting Habitat Across New Jersey (CHANJ)

CHANJ is a comprehensive effort to prioritize habitat conservation in New Jersey. The project lead is NJDEP's Division of Fish and Wildlife. The primary focus is on improving conditions for animal movement across the state, recognizing the dense network of roads that divide natural habitats NJ. Dozens of agencies were part of developing the CHANJ products over 5+ years. Transportation planners, wildlife biologists, land trusts, University professors, GIS analysts, and many others contributed to this project.
The three main initiatives are: a) prioritize land protection; b) inform habitat restoration and management; and c) guide mitigation of barriers effects on wildlife and habitats. CHANJ provides a variety of tools and resources to advance these initiatives.

The CHANJ mapping tools include datasets that are being used as the main products within the Habitat Connectivity ranking category. CHANJ Cores are large areas of contiguous natural habitat (at least 78.5 hectares). CHANJ Corridors are areas of contiguous habitat that represent the best possible wildlife movement corridors between cores. Corridors are ranked for ease of movement (i.e. corridor gradients). CHANJ Stepping Stones are a refinement of the corridors. These areas are critical areas within corridors, with an emphasis on

species that are less mobile and may disperse more locally (less wide-ranging).
For a full description of how the CHANJ datasets were assembled, including background and decision points, please see the link for the Guidance Document below.

Ranking:
CHANJ Cores = 10 points
CHANJ Stepping Stones = 10 points

CHANJ Corridors:
Corridor Gradient 1 (easier movement) = 10 points
Corridor Gradient 2 = 9 points
Corridor Gradient 3 = 8 points
Corridor Gradient 4 = 7 points
Corridor Gradient 5 (more difficult movement) = 6 points

Note: The maximum number of ranking points possible from the CHANJ data products is 10.

Data links:
Main CHANJ website (includes comprehensive information on the project, including ongoing projects, partners, stories, and additional resources):
https://www.njfishandwildlife.com/ensp/chanj.htm

Datasets:
https://gisdata-njdep.opendata.arcgis.com/datasets/connecting-habitat-across-new-jersey-chanj-action regions-for-new-jersey

CHANJ Guidance Document (version 1.0 – 2019):
https://www.njfishandwildlife.com/ensp/chanj_guidance.pdf

Forest Core

This dataset was developed from the NJDEP Landscape Project data. Contiguous forest blocks were identified and 'forest core' areas had to meet a 10 hectare (24.7 acres) minimum size. A 90-meter buffer was applied inward to remove small polygons that would not qualify as forest core. The percent of each contiguous forest patch comprised of core area greater than or equal to 10 hectares was calculated.

Ranking:
Forest Core = 2 points
Forest Core Area Index = 1 point for a high index value (essentially the most significant of core forest areas). High index value areas are based on % of contiguous forest patches that meet the forest core definition of being greater than 10 ha). The top 2 equal interval data classes were used, which means forest patches with >53% forest core.

Data links:
Report link:
https://www.state.nj.us/dep/fgw/ensp/landscape/lp_report_3_3.pdf

Data link:
https://www.state.nj.us/dep/fgw/ensp/landscape/download.htm

Nature's Network Habitat Connectivity (Cores and Connectors):

As noted above, Nature's Network is a robust mapping analysis for the entire Northeast and many partners

(academic, governmental (13 states & USFWS), and non-profit) were involved. The goal of Nature's Network is "to identify the best opportunities for conserving intact habitat, supporting imperiled species, and connecting natural areas across the Northeast region."
http://naturesnetwork.org/

Nature's Network completed a habitat connectivity analysis that highlights connections in the landscape. Cores are intact terrestrial areas that provide suitable habitat for a wide variety of animals and plants. Connectors provide a link between the cores.
The cores are based on a HUC6 analysis so it's at a broad scale. 25% of each HUC6 area is selected as core habitat, so it's an attempt to identify the top 25% across the landscape. Note: TNC's terrestrial resilience is included in the development of the cores. That resilience layer is captured elsewhere in the rankings.

Ranking:
Cores/Connectors = 5 points