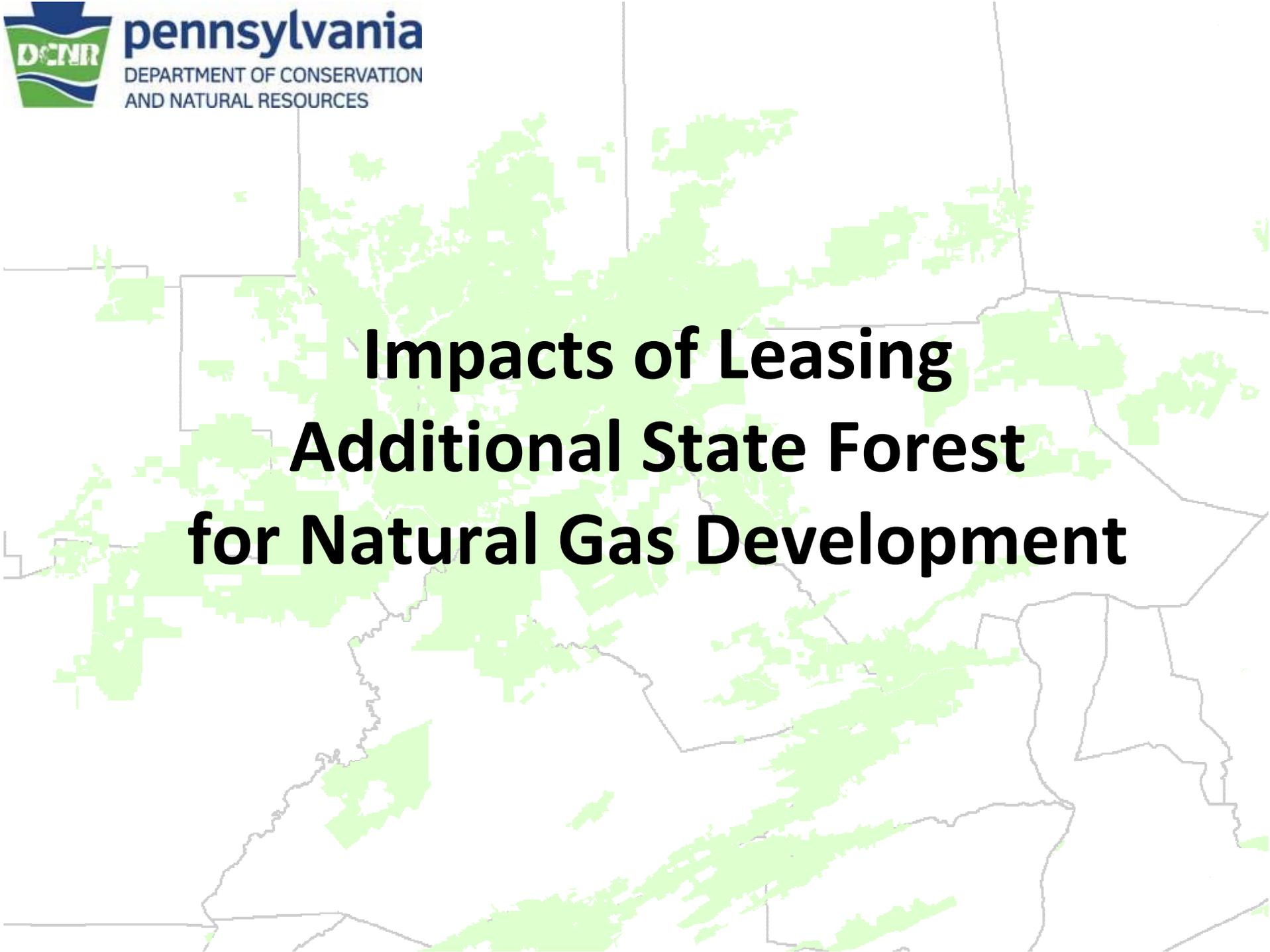




pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

A map of Pennsylvania with various regions outlined in grey. Large areas of the map are shaded in light green, representing state forest land. The text is overlaid on this green-shaded area.

Impacts of Leasing Additional State Forest for Natural Gas Development



pennsylvania

DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

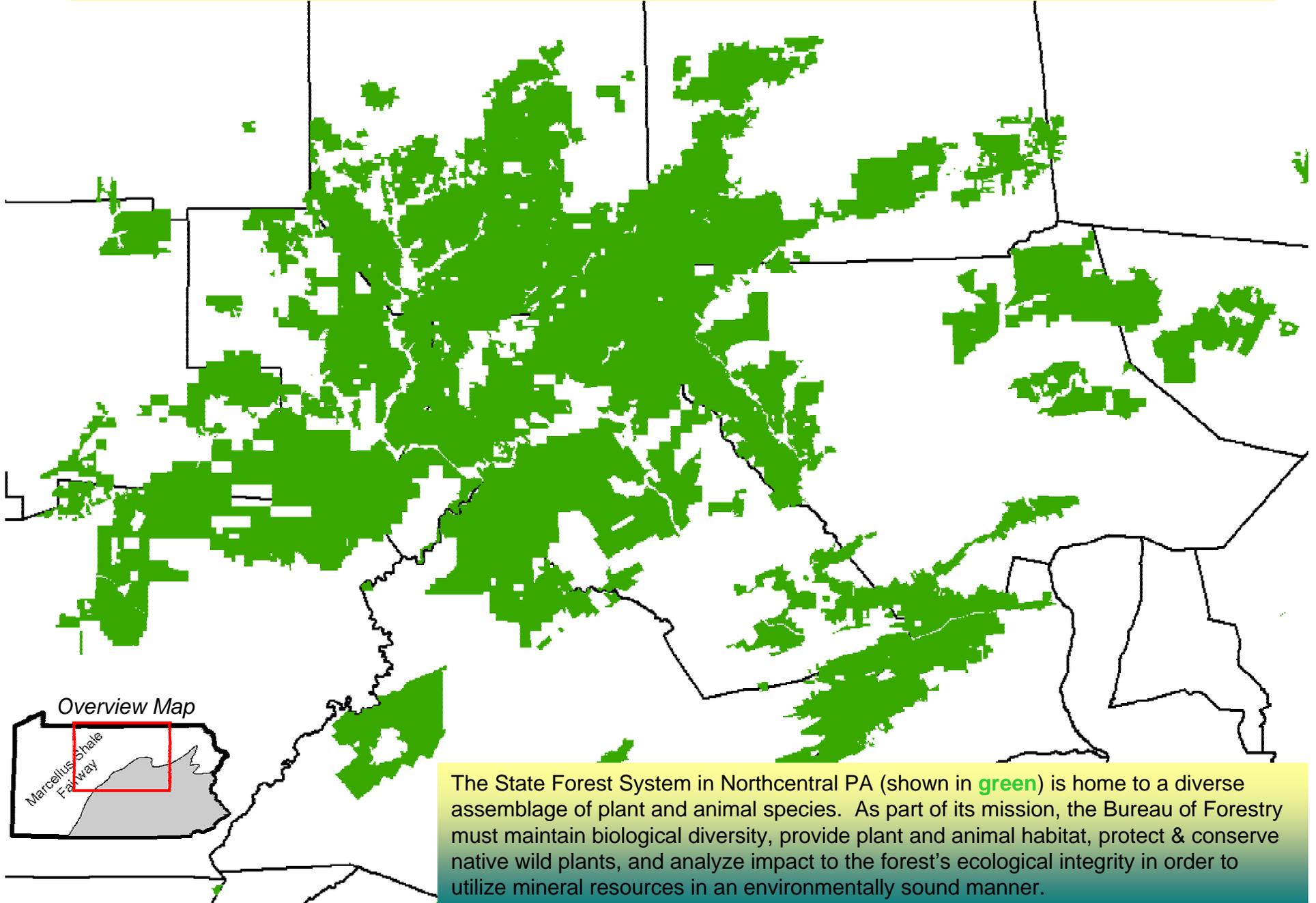
DCNR is entrusted to balance the uses and values of our state forests while protecting the integrity and health of the whole system.

There are proposals and public debate about the merits of a moratorium on natural gas drilling on state forest.

This mapping analysis demonstrates how any additional leasing involving surface disturbance upsets the sustainable balance DCNR is charged to maintain.

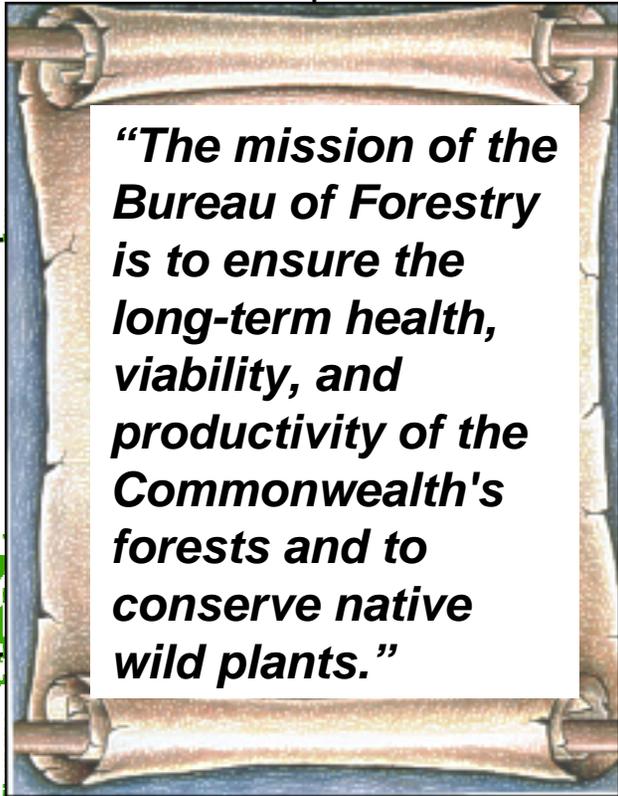


State Forest Land in North-Central Pennsylvania

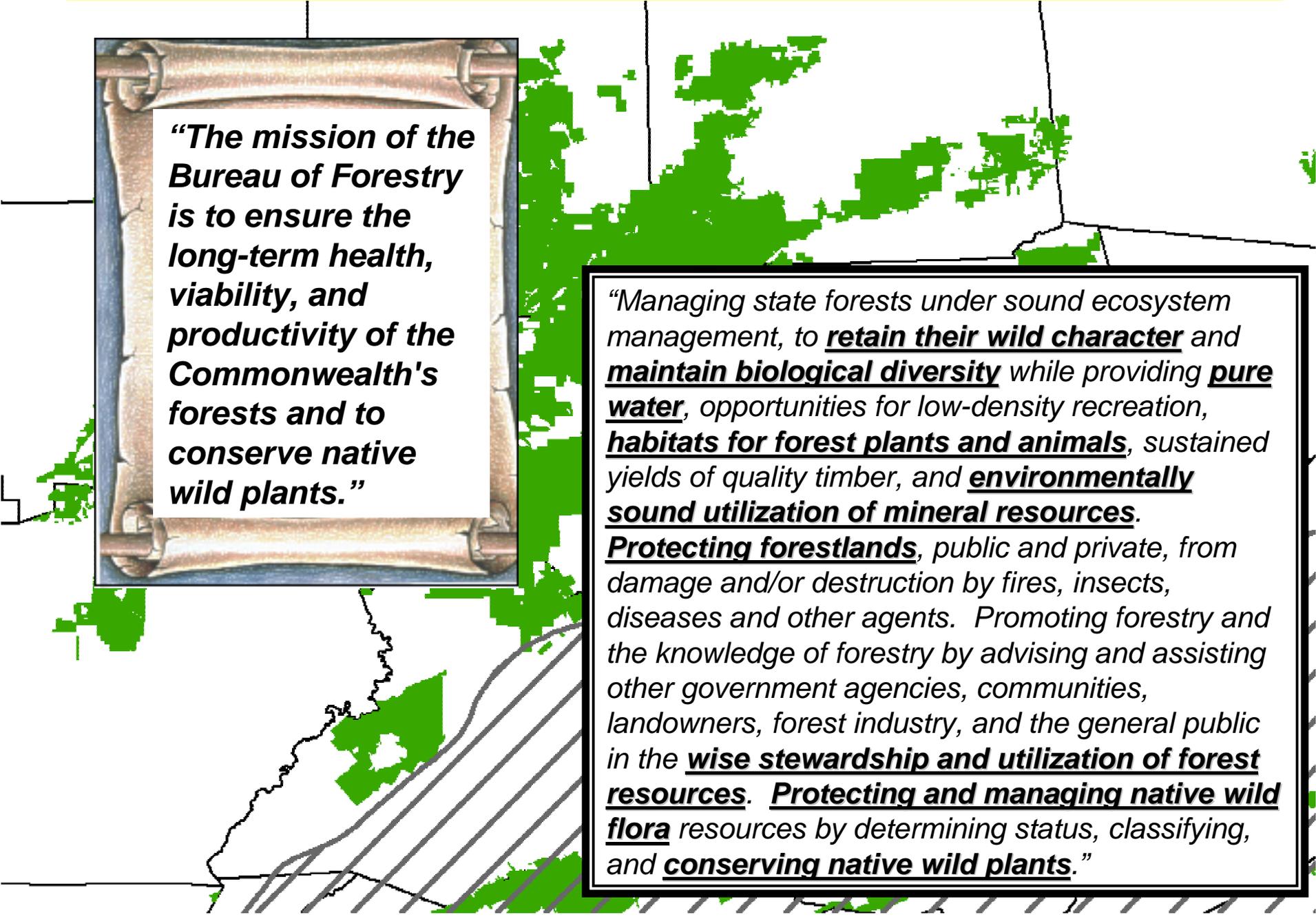


The State Forest System in Northcentral PA (shown in **green**) is home to a diverse assemblage of plant and animal species. As part of its mission, the Bureau of Forestry must maintain biological diversity, provide plant and animal habitat, protect & conserve native wild plants, and analyze impact to the forest's ecological integrity in order to utilize mineral resources in an environmentally sound manner.

State Forest Land in Northcentral Pennsylvania



“The mission of the Bureau of Forestry is to ensure the long-term health, viability, and productivity of the Commonwealth's forests and to conserve native wild plants.”



*“Managing state forests under sound ecosystem management, to **retain their wild character** and **maintain biological diversity** while providing **pure water**, opportunities for low-density recreation, **habitats for forest plants and animals**, sustained yields of quality timber, and **environmentally sound utilization of mineral resources**. **Protecting forestlands**, public and private, from damage and/or destruction by fires, insects, diseases and other agents. Promoting forestry and the knowledge of forestry by advising and assisting other government agencies, communities, landowners, forest industry, and the general public in the **wise stewardship and utilization of forest resources**. **Protecting and managing native wild flora** resources by determining status, classifying, and **conserving native wild plants**.”*

Maintaining the Forest's Ecological Integrity

Species of Concern



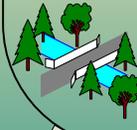
Native Biological Diversity
Threatened / Endangered Spp.
Rare / Declining Spp.

Unique Areas



Wild & Natural Areas
Steep, Wet, & Rocky Areas
Old Growth
Wild Plant Sanctuaries

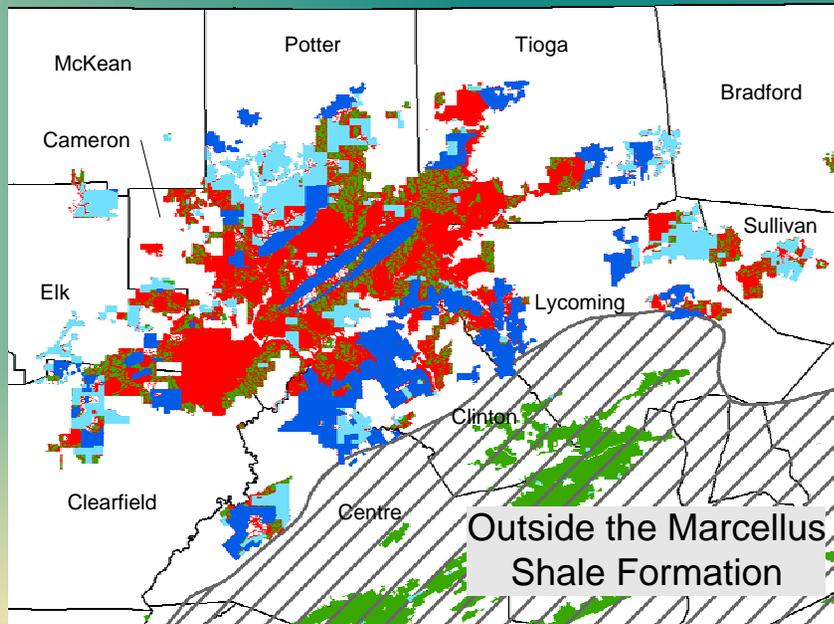
Road, Trail, & Stream Buffers



Aesthetics / Scenery
Corridors
Connectivity
Water Quality

Legend

- DCNR Gas Lease
- Severed Rights
- Ecologically Sensitive
- Other State Forest



1,500,000 acres
- 700,000 acres
- 702,500 acres

97,500 acres

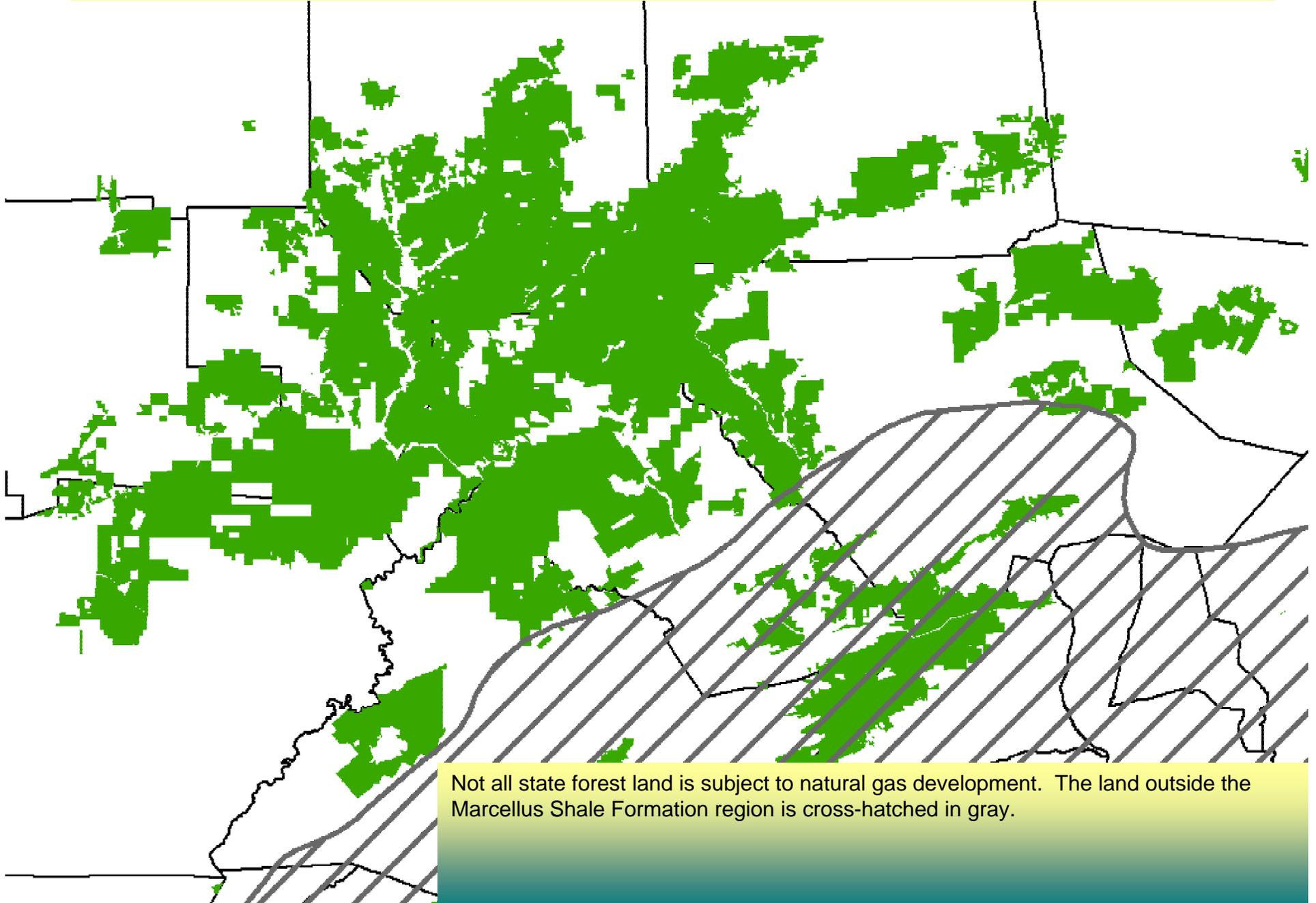
State Forest Land
in the Marcellus
Shale Region

State Forest Land
Currently Leased or
Severed

Unleased Land in
Ecologically
Sensitive Areas

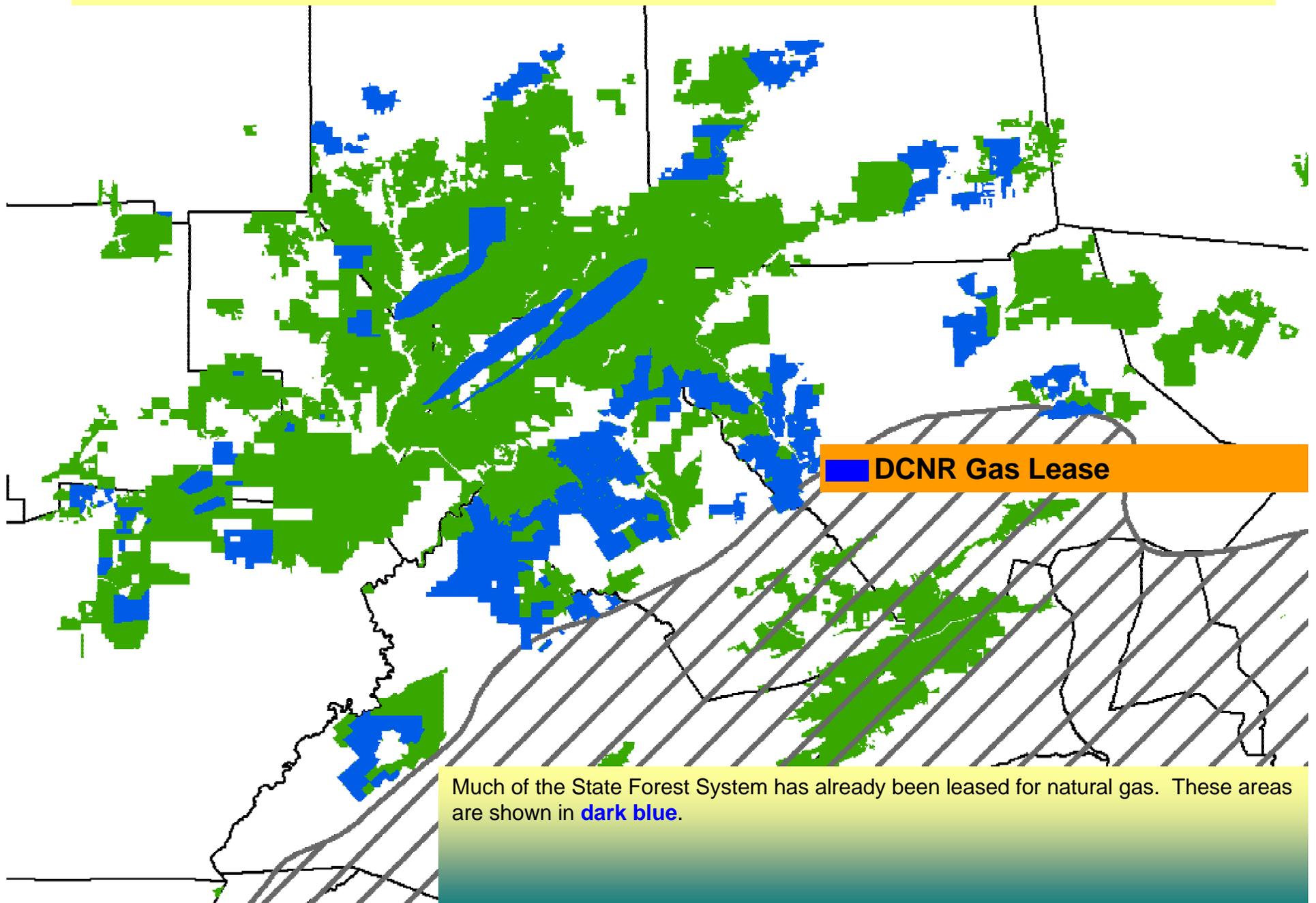
Inaccessible w/o
Damaging
Ecologically
Sensitive Areas

Maintaining the Forest's Ecological Integrity



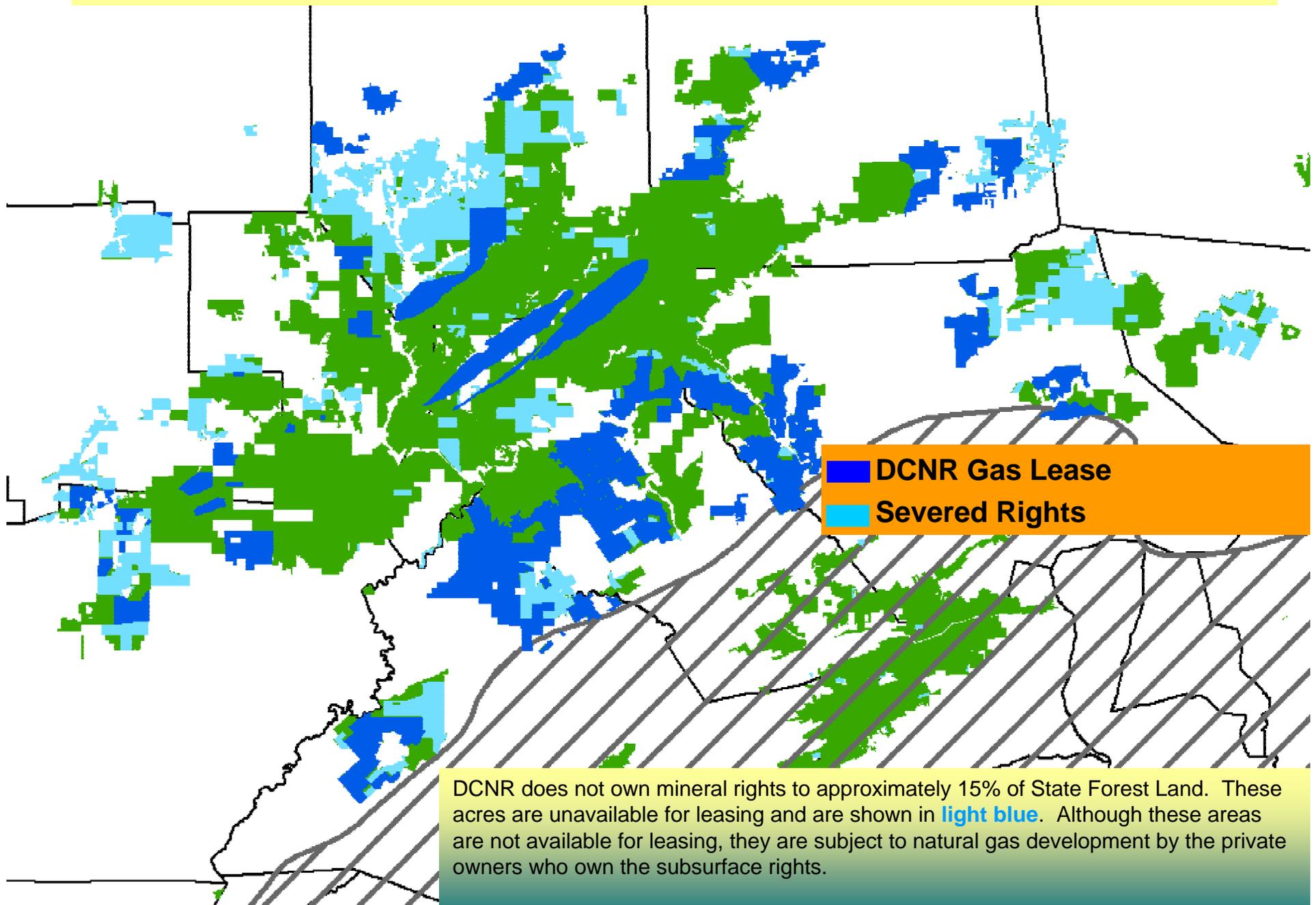
Not all state forest land is subject to natural gas development. The land outside the Marcellus Shale Formation region is cross-hatched in gray.

Maintaining the Forest's Ecological Integrity

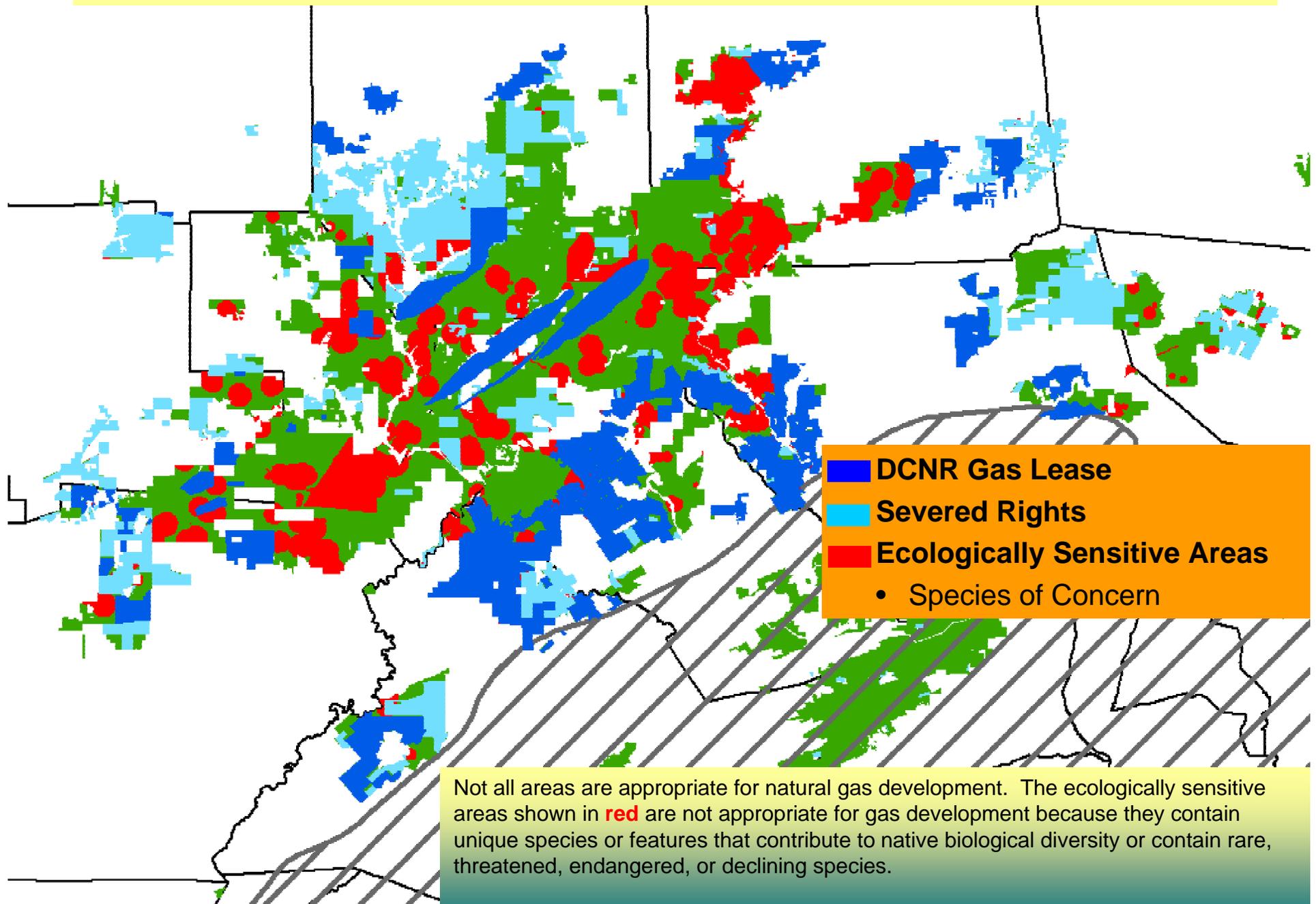


Much of the State Forest System has already been leased for natural gas. These areas are shown in **dark blue**.

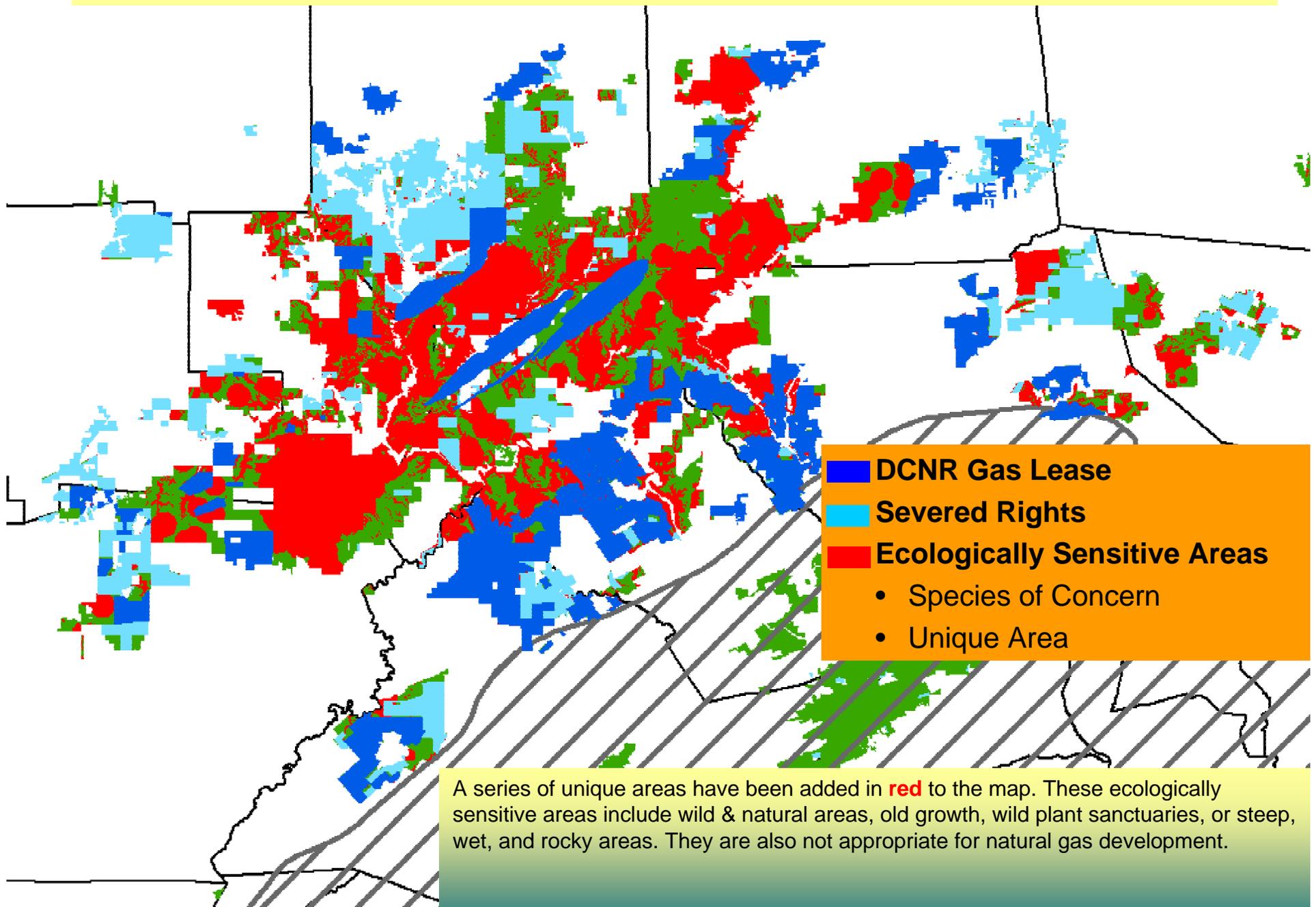
Maintaining the Forest's Ecological Integrity



Maintaining the Forest's Ecological Integrity

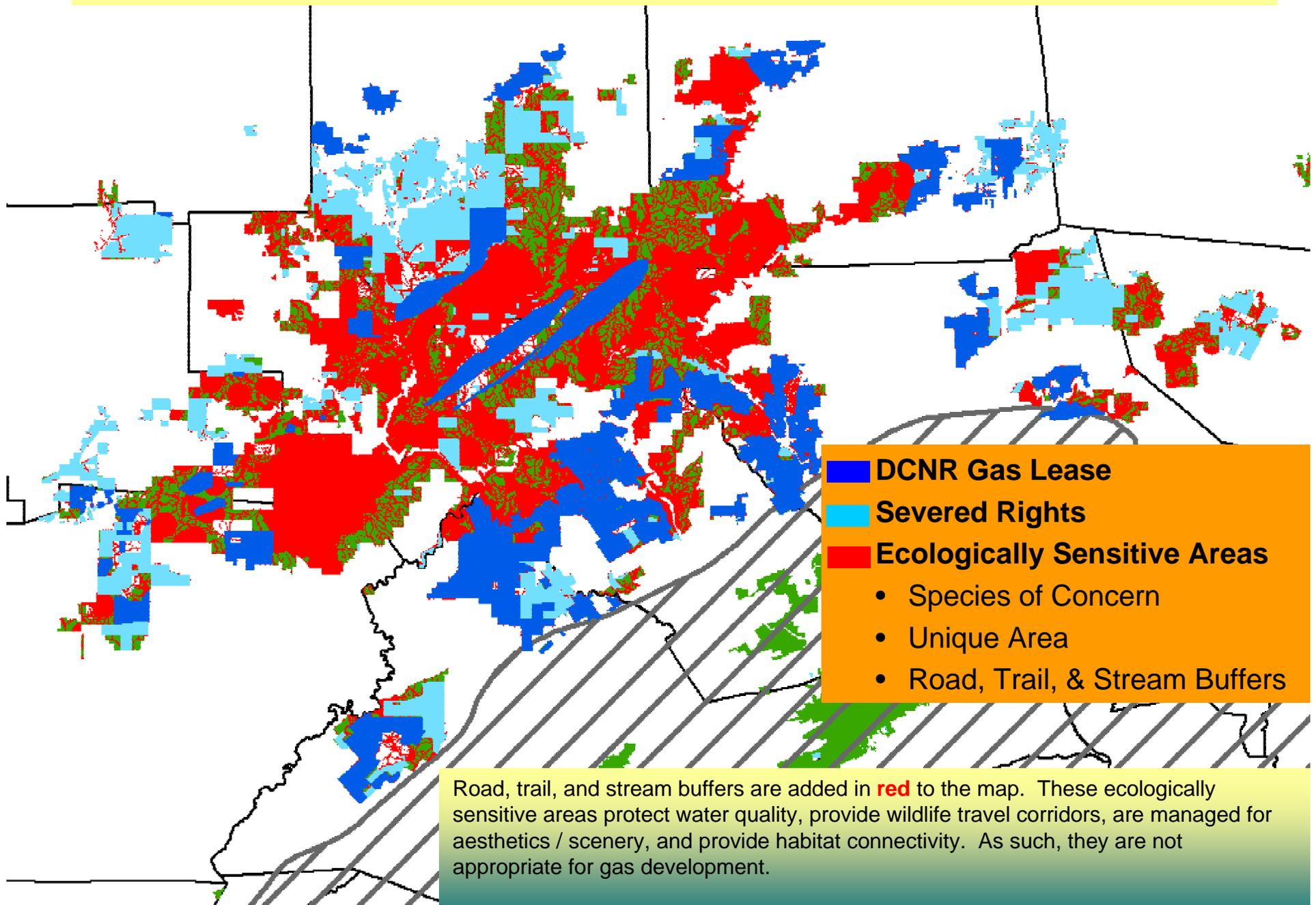


Maintaining the Forest's Ecological Integrity

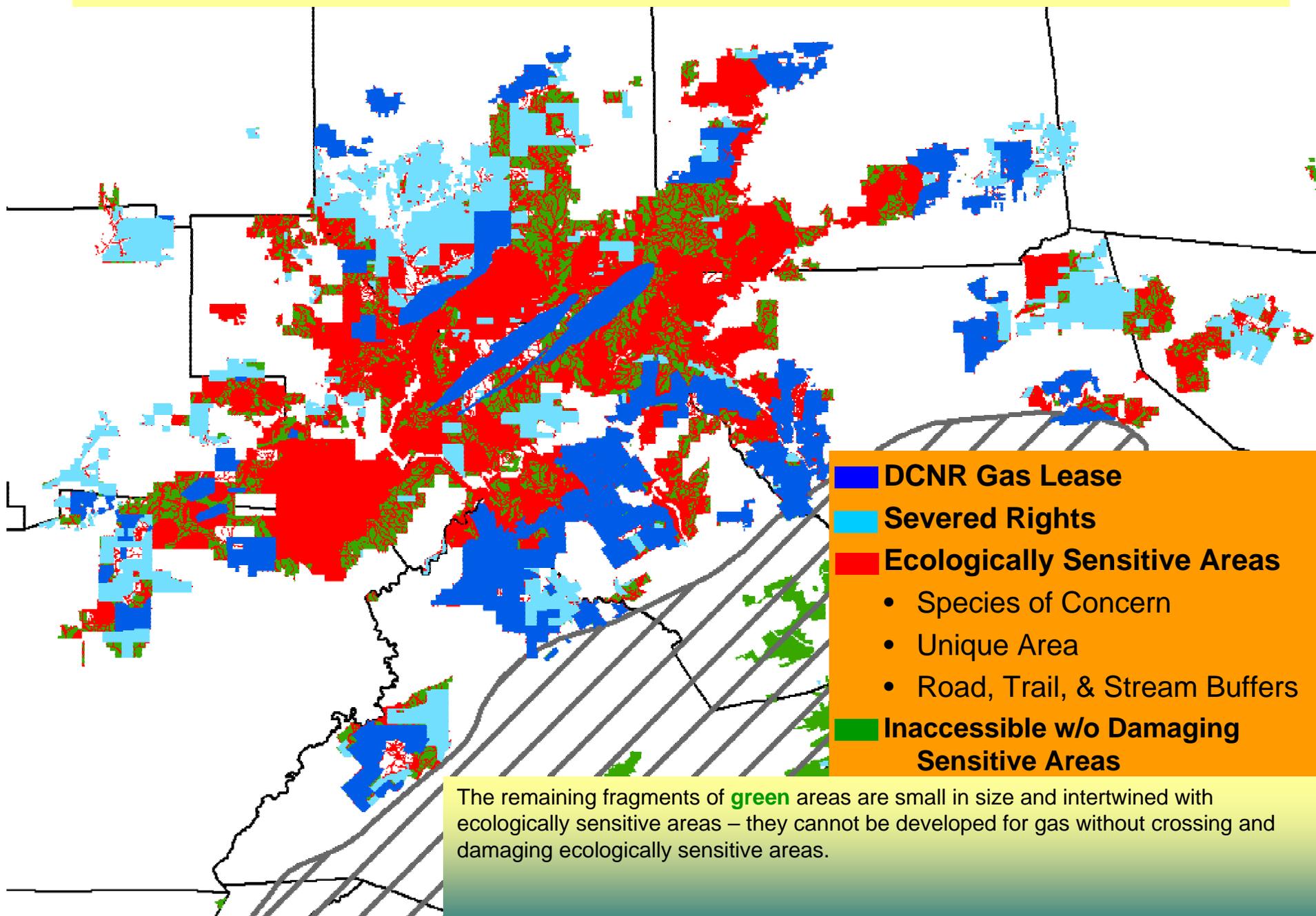


A series of unique areas have been added in **red** to the map. These ecologically sensitive areas include wild & natural areas, old growth, wild plant sanctuaries, or steep, wet, and rocky areas. They are also not appropriate for natural gas development.

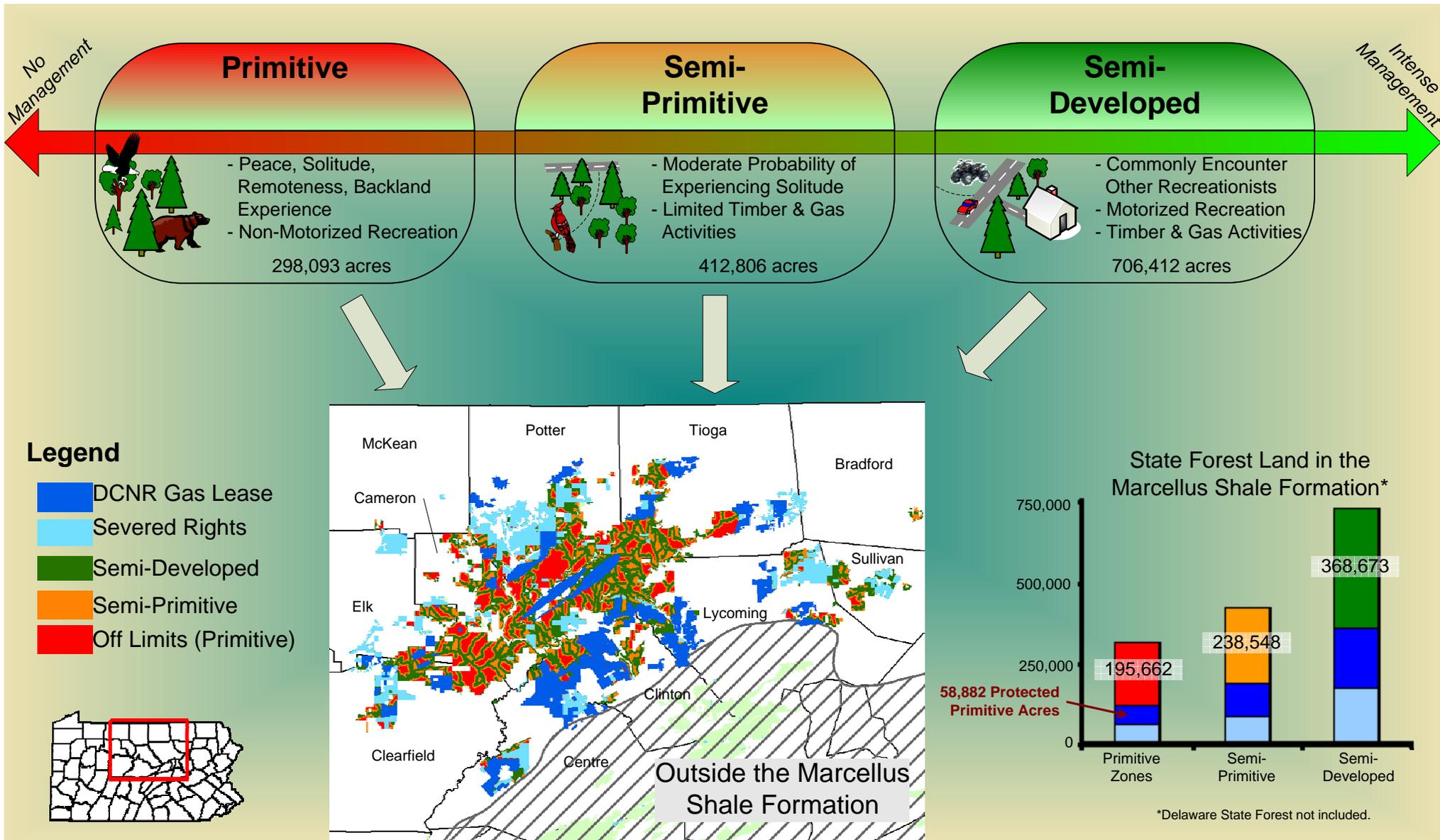
Maintaining the Forest's Ecological Integrity



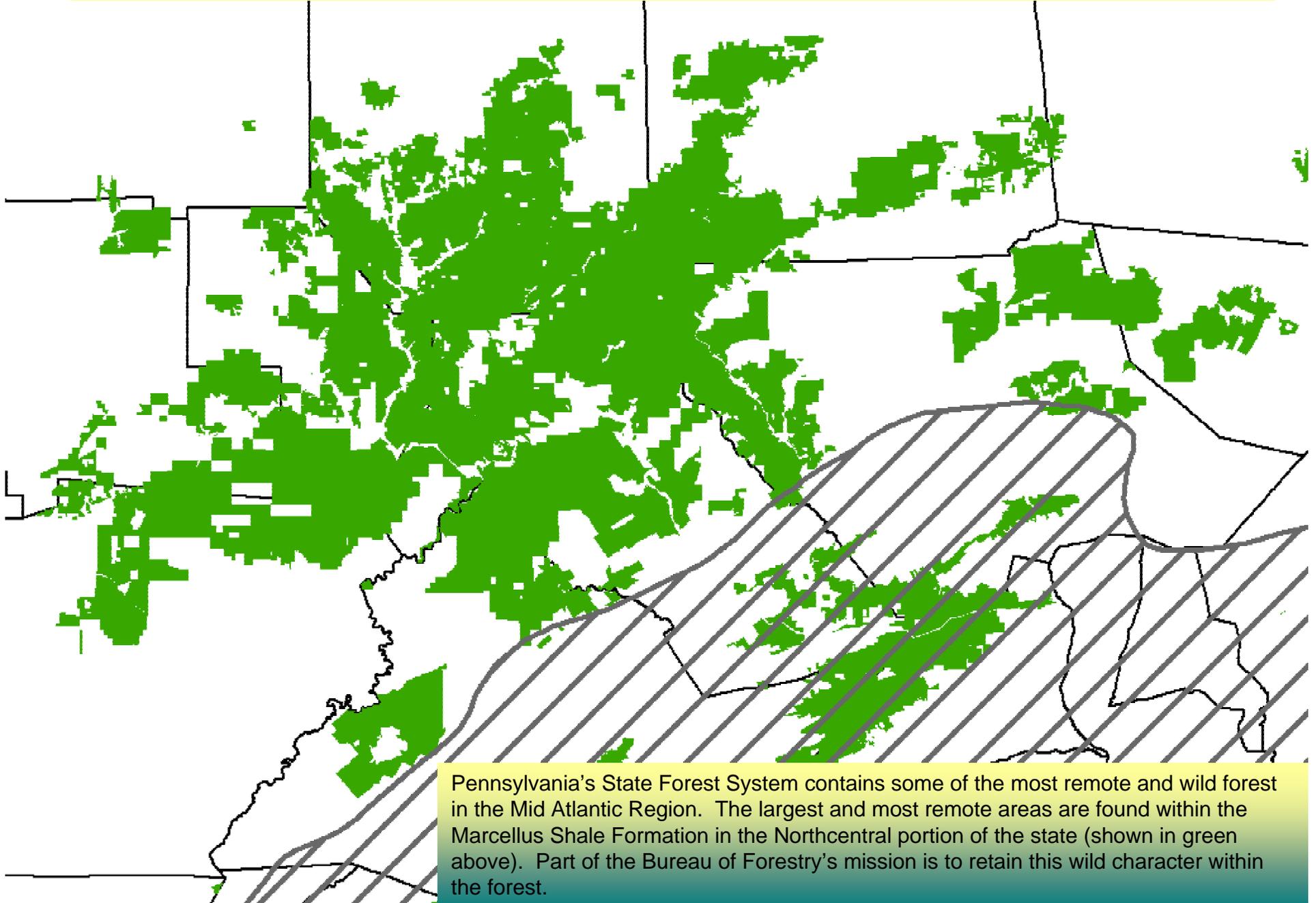
Maintaining the Forest's Ecological Integrity



Maintaining the Forest's Wild Character

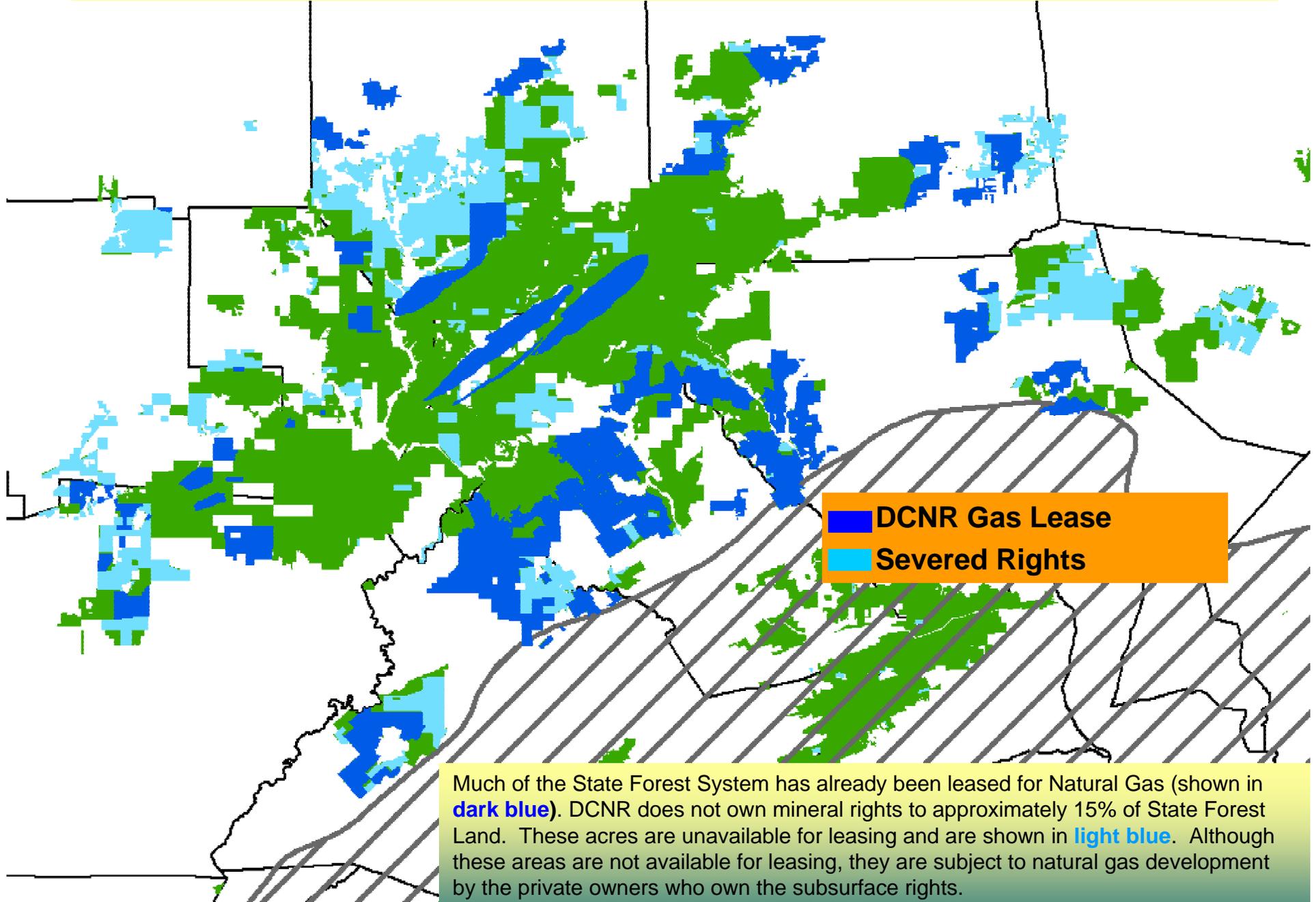


Maintaining the Forest's Wild Character

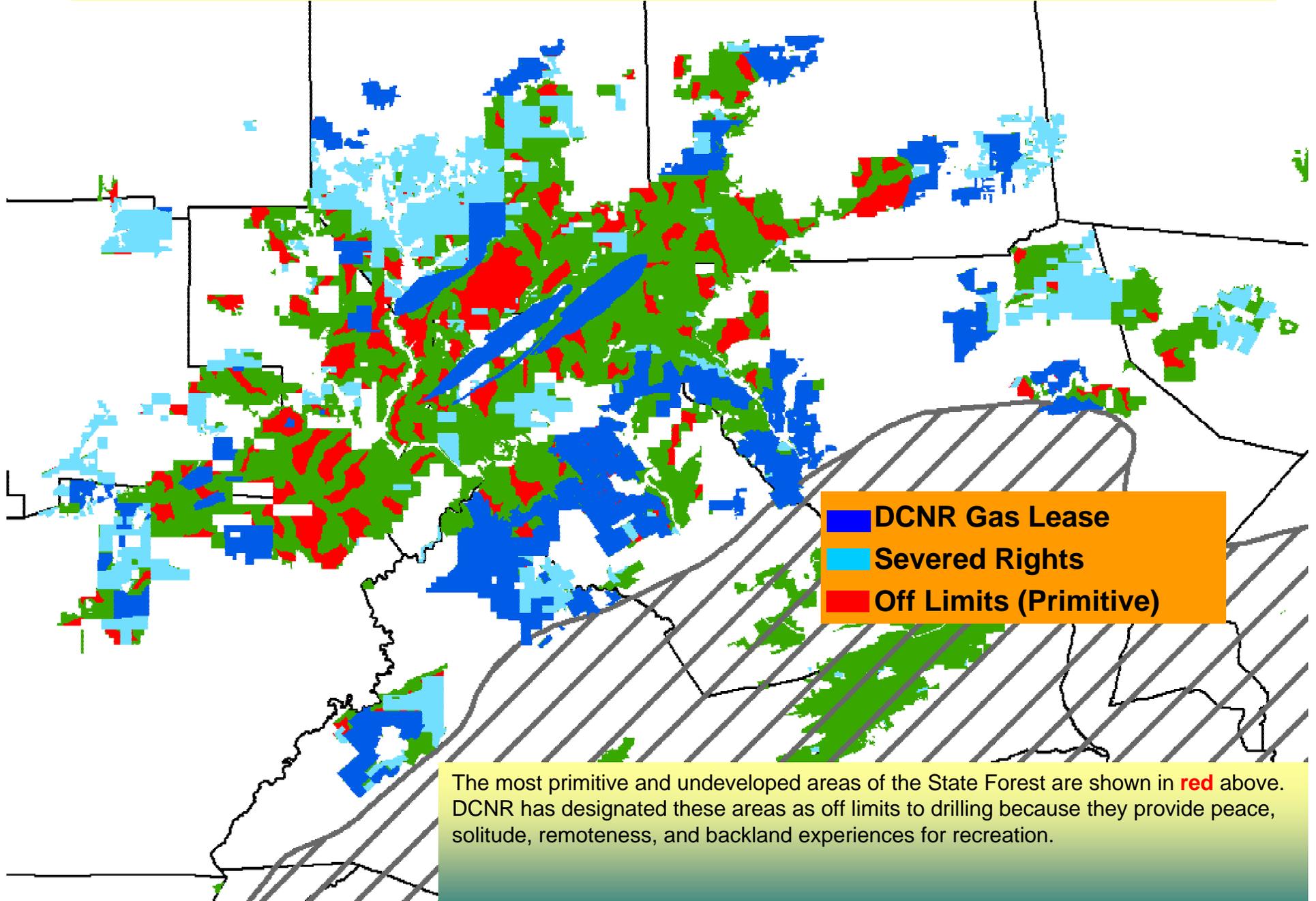


Pennsylvania's State Forest System contains some of the most remote and wild forest in the Mid Atlantic Region. The largest and most remote areas are found within the Marcellus Shale Formation in the Northcentral portion of the state (shown in green above). Part of the Bureau of Forestry's mission is to retain this wild character within the forest.

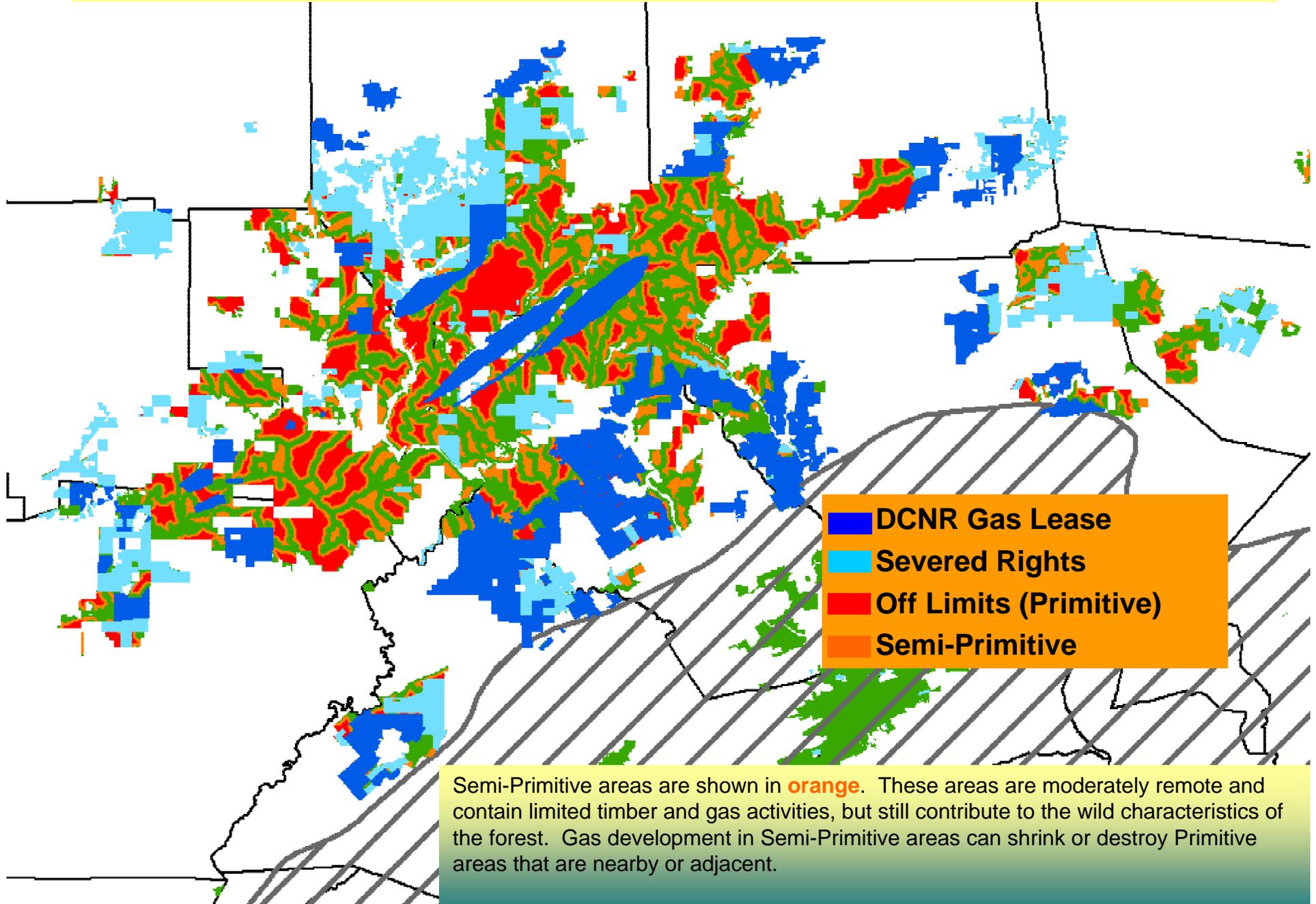
Maintaining the Forest's Wild Character



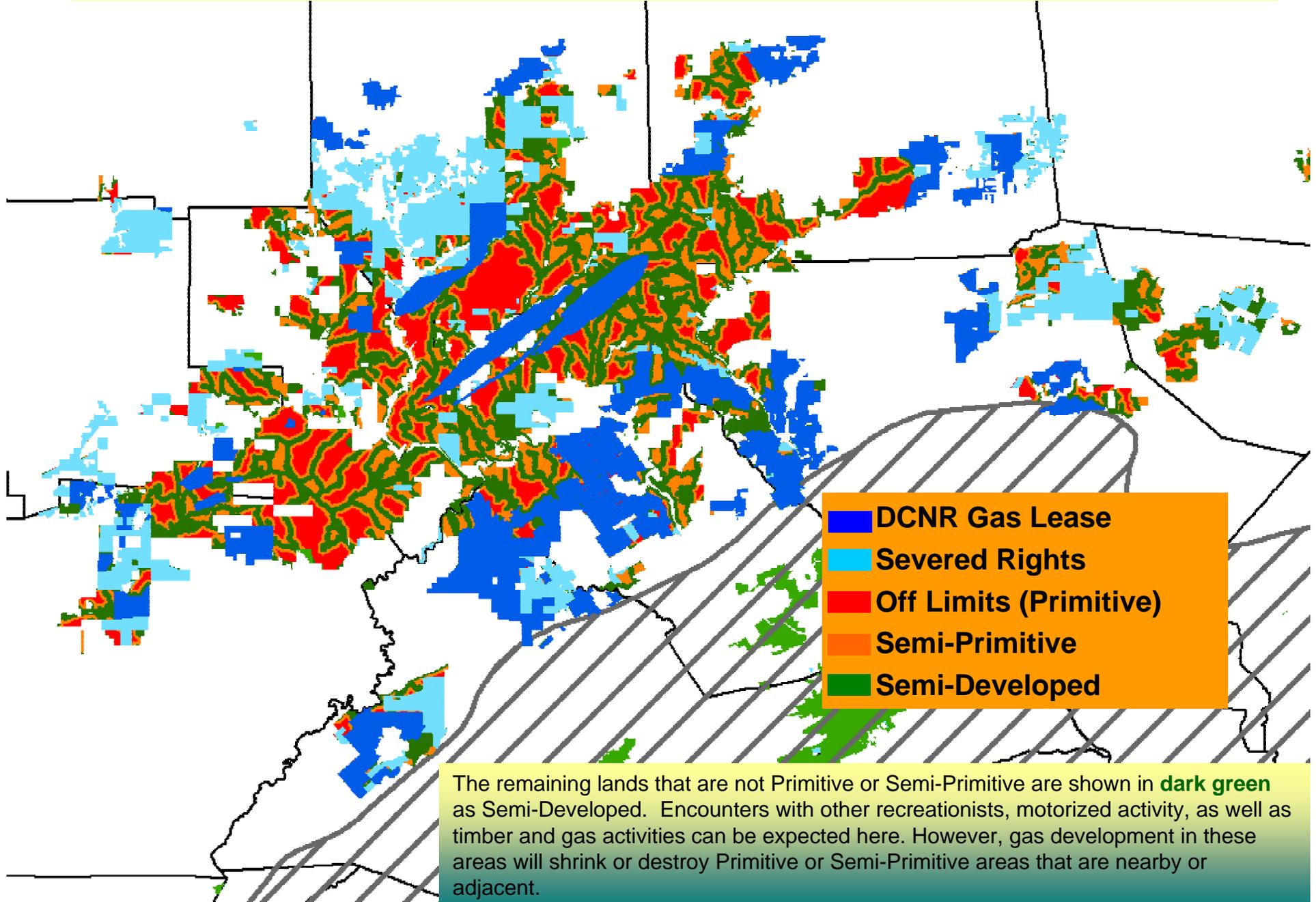
Maintaining the Forest's Wild Character



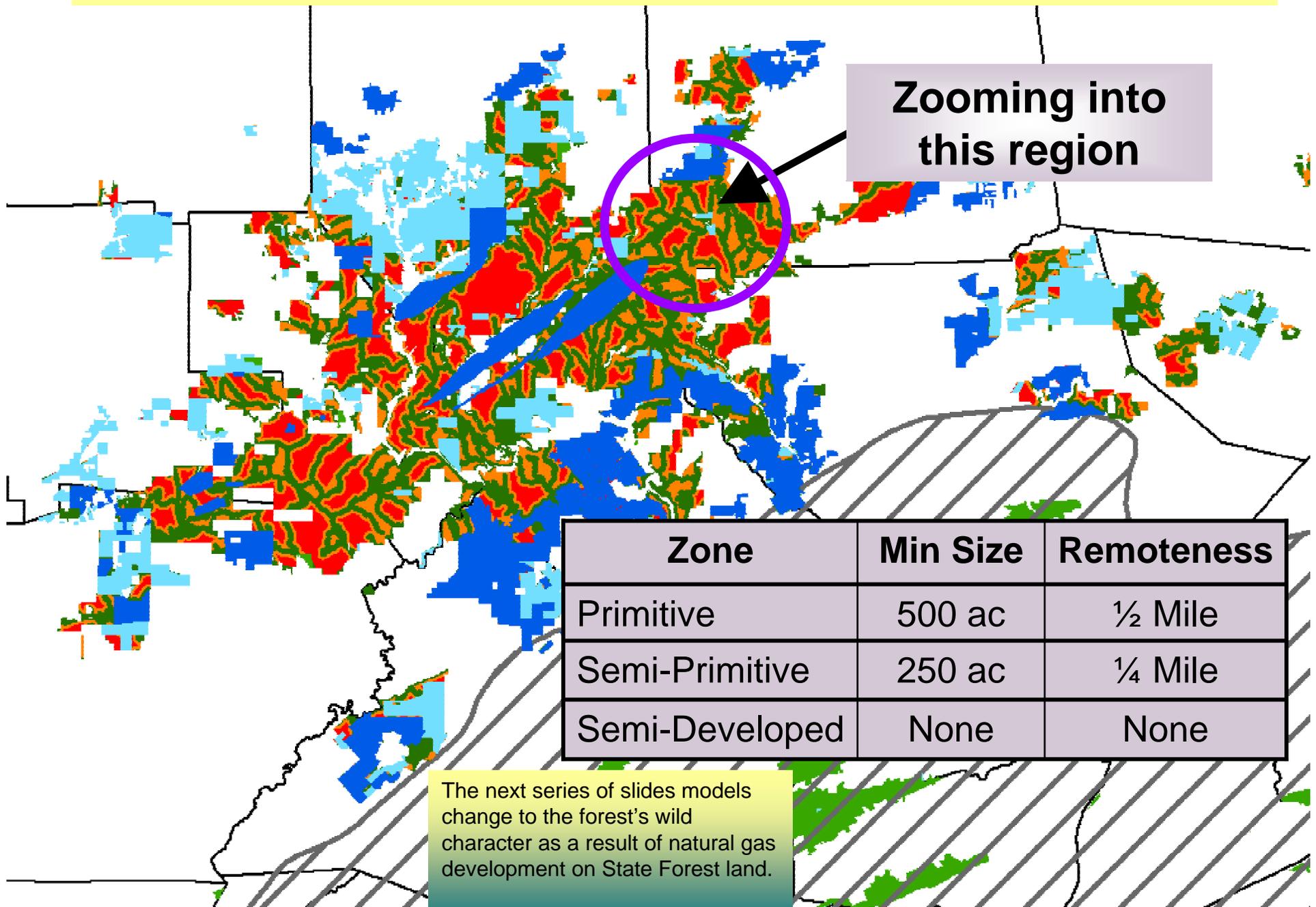
Maintaining the Forest's Wild Character



Maintaining the Forest's Wild Character

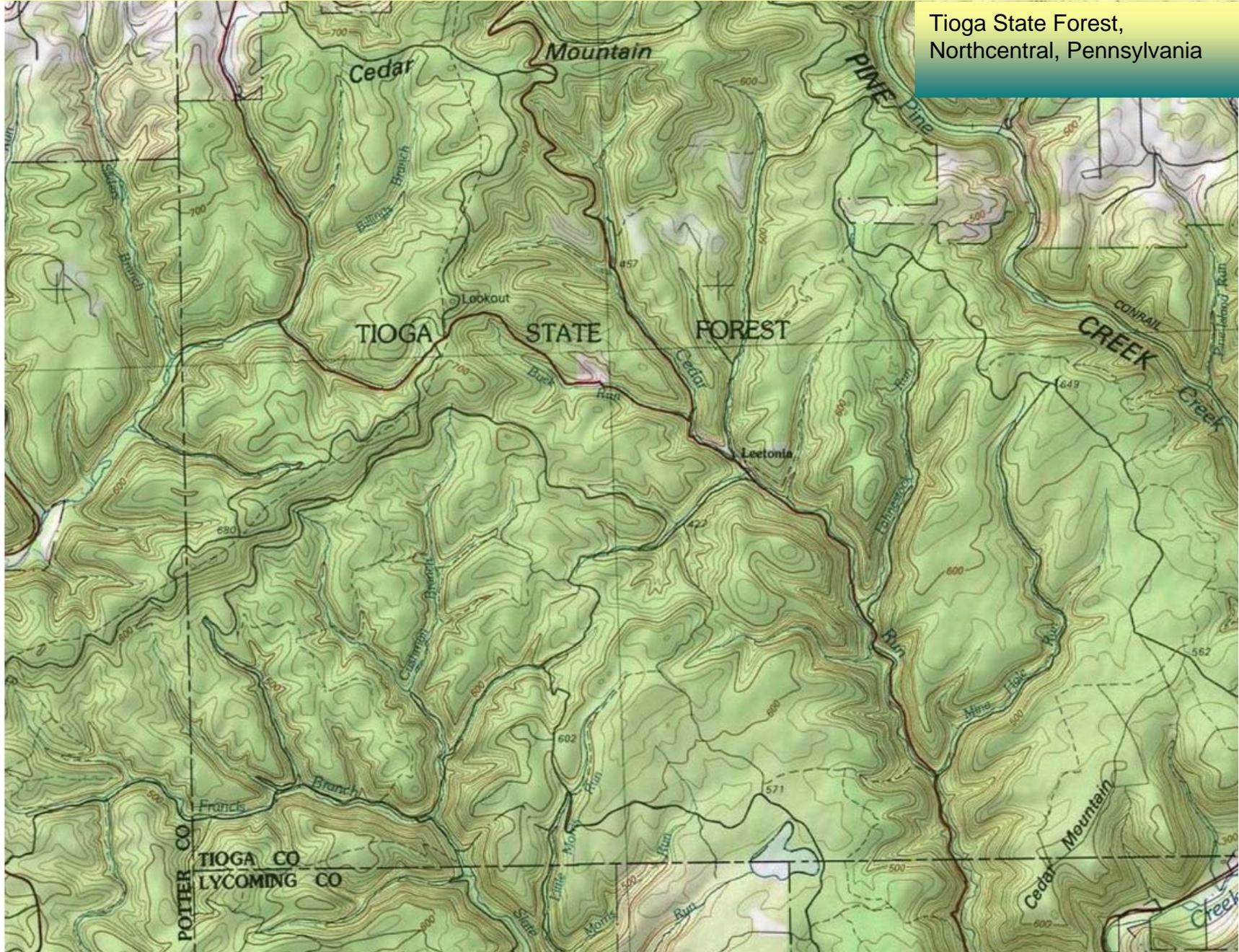


Impacts on the Wild Character



Topography

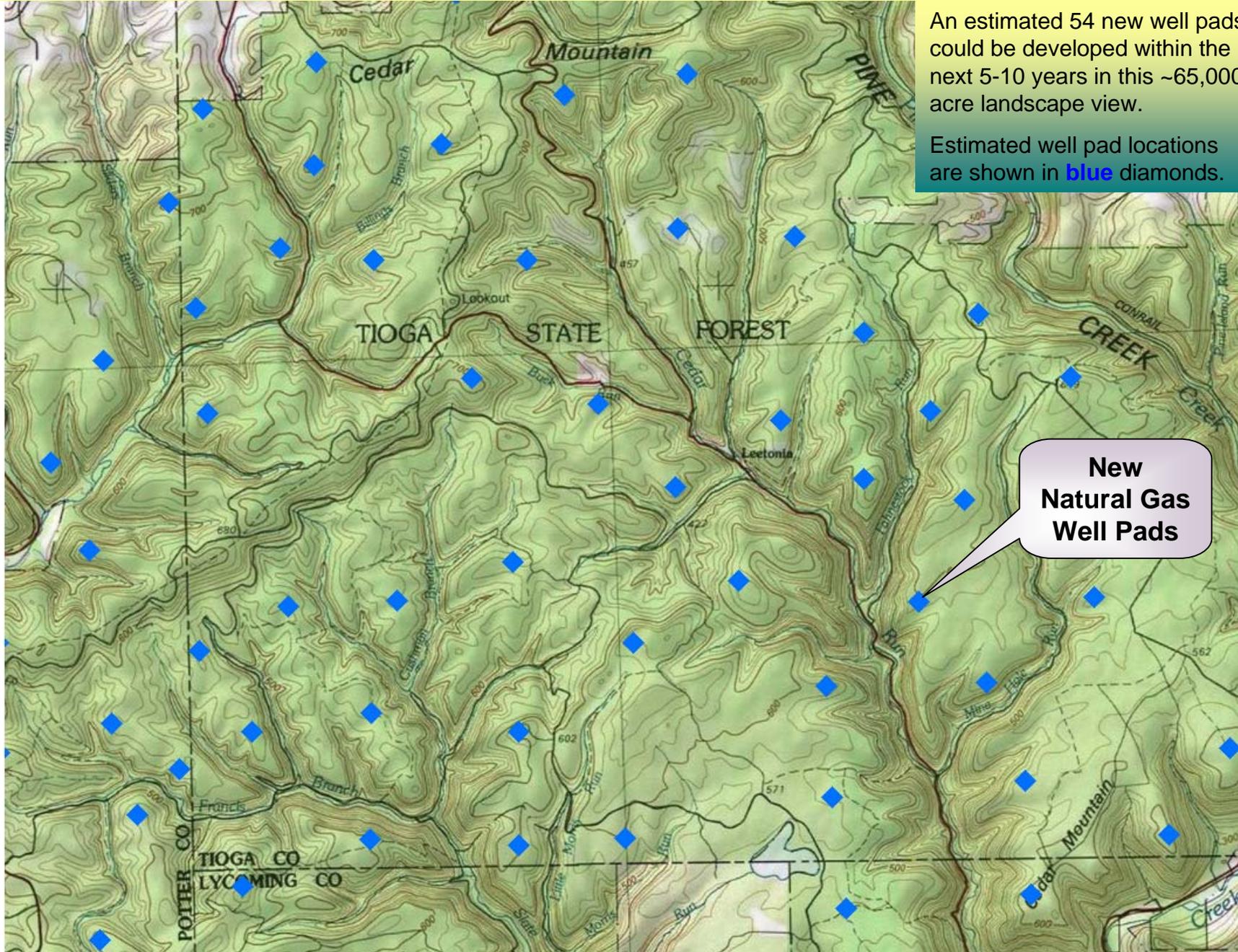
Tioga State Forest,
Northcentral, Pennsylvania



New Well Pad Locations

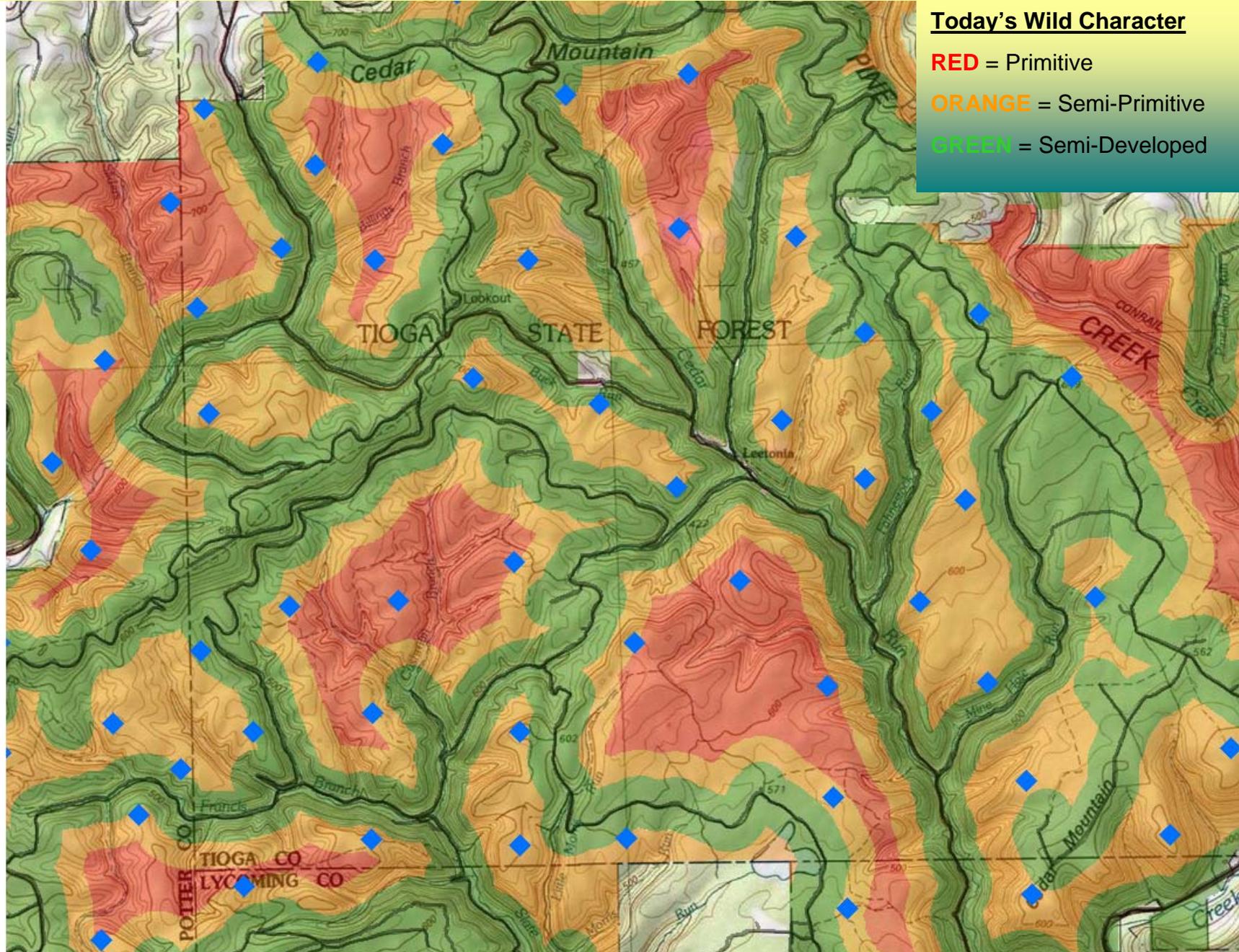
An estimated 54 new well pads could be developed within the next 5-10 years in this ~65,000 acre landscape view.

Estimated well pad locations are shown in **blue** diamonds.

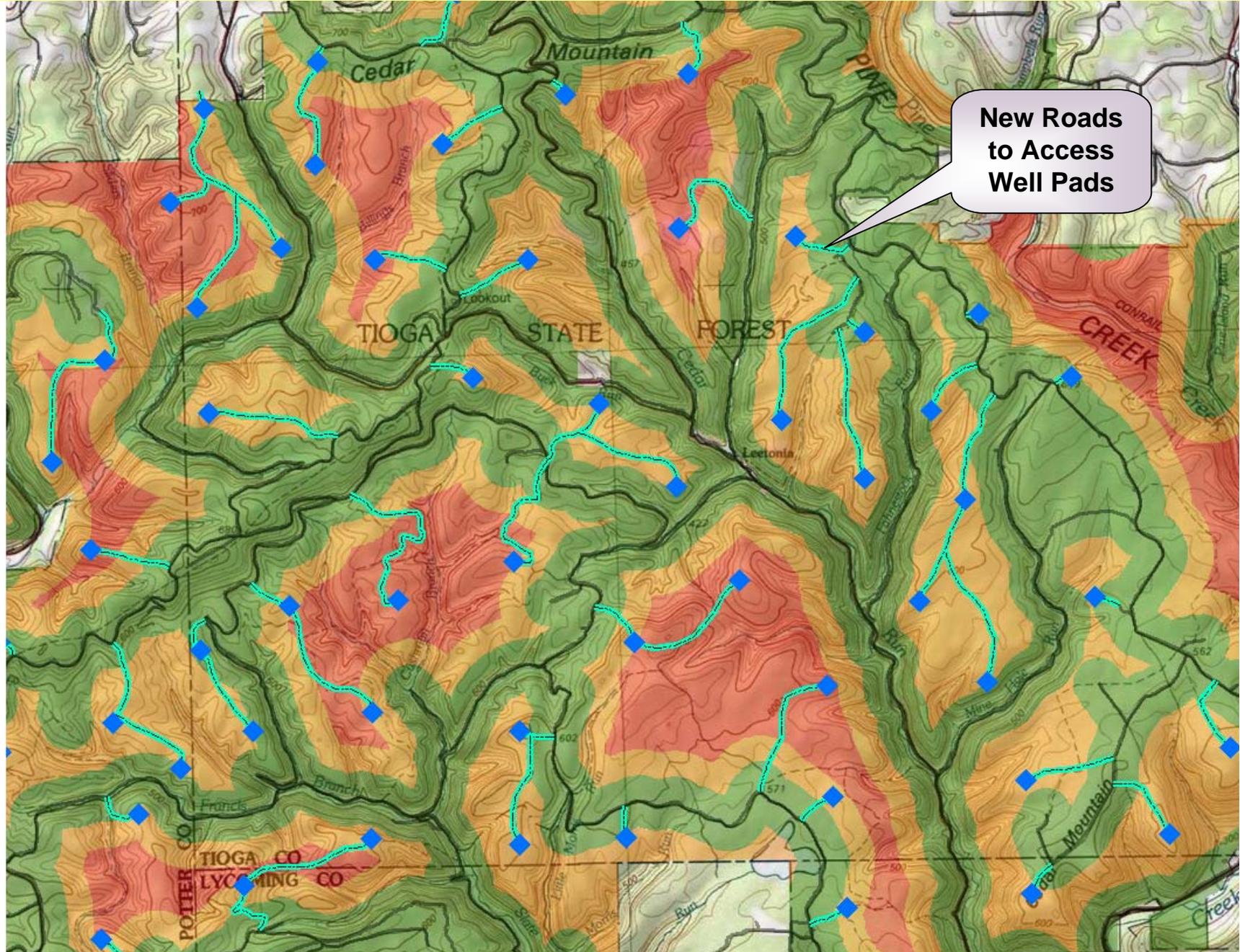


**New
Natural Gas
Well Pads**

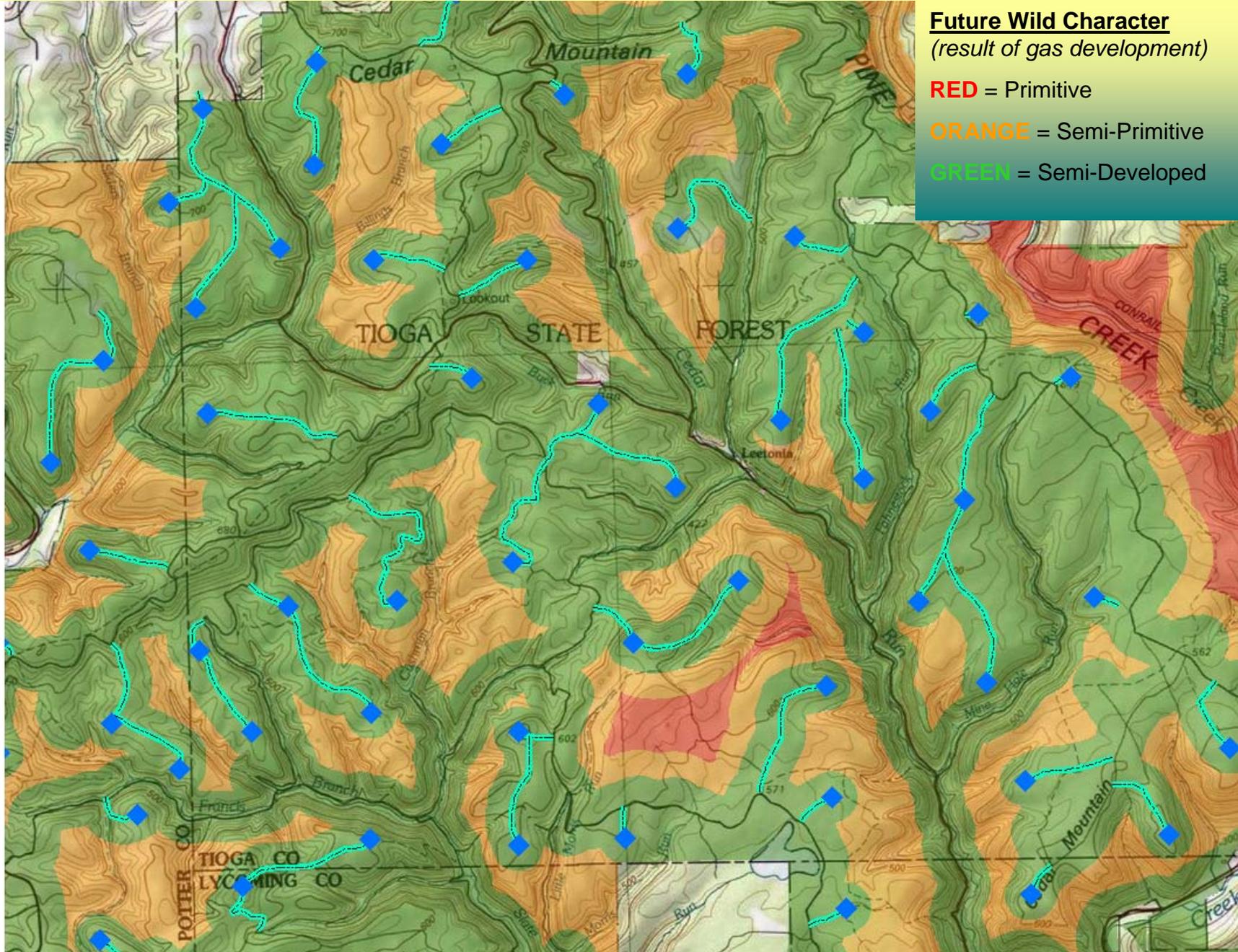
Wild Character before Well Pads



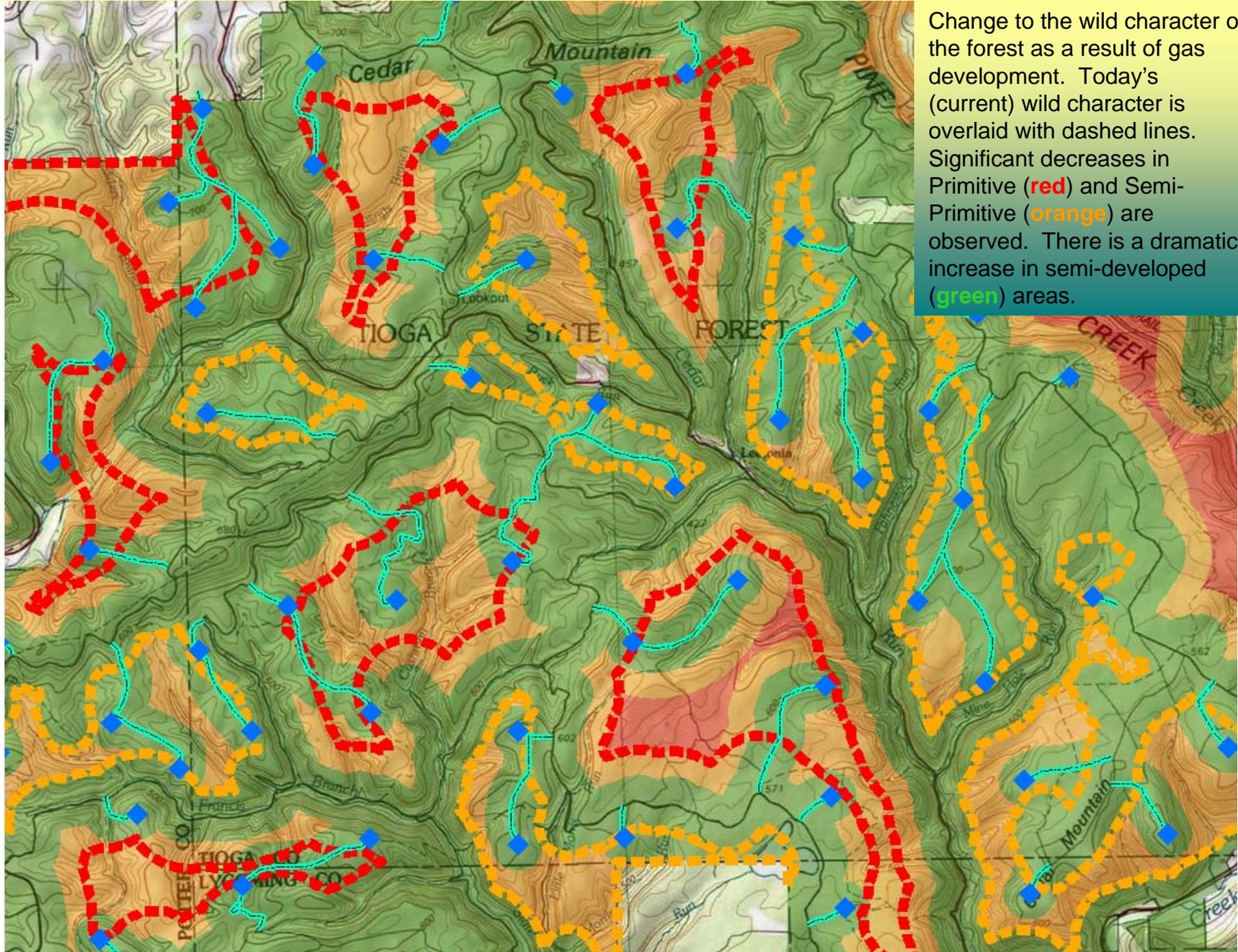
New Access Roads Required



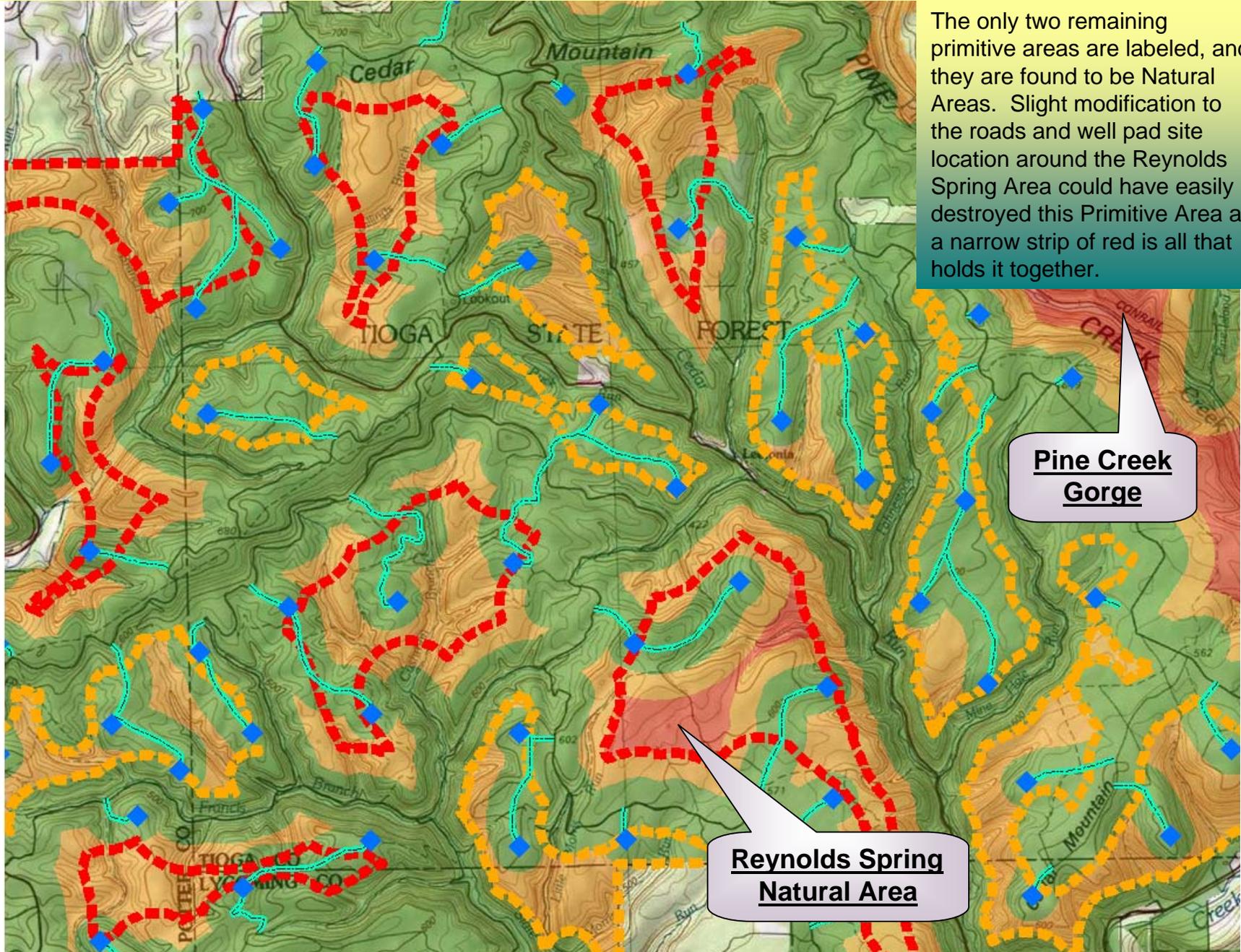
Forest's Wild Character with New Well Pads



Impact on the Forest's Wild Character



Impact on the Forest's Wild Character



The only two remaining primitive areas are labeled, and they are found to be Natural Areas. Slight modification to the roads and well pad site location around the Reynolds Spring Area could have easily destroyed this Primitive Area as a narrow strip of red is all that holds it together.

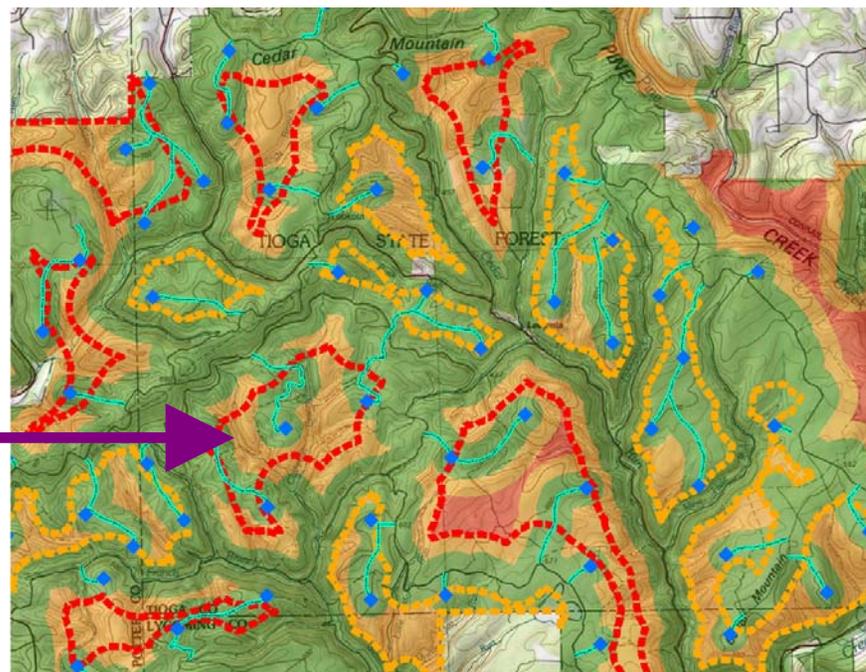
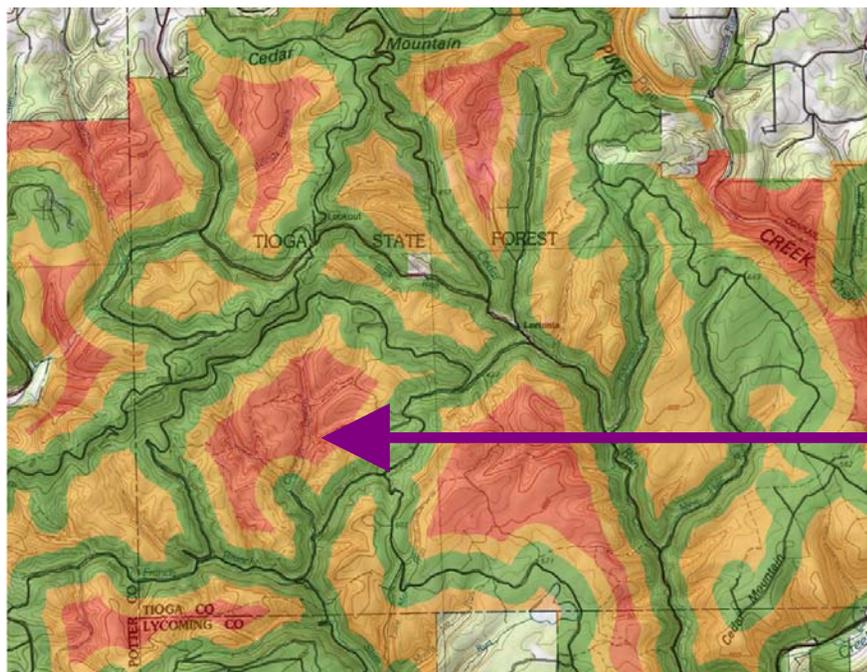
Pine Creek Gorge

Reynolds Spring Natural Area

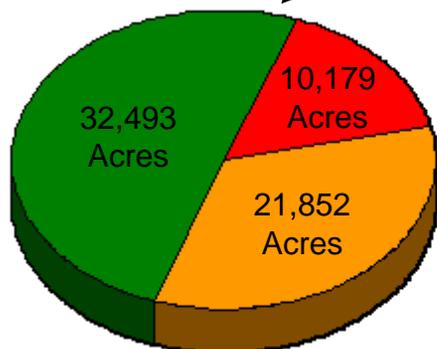
Change in the Forest's Wild Character

Before

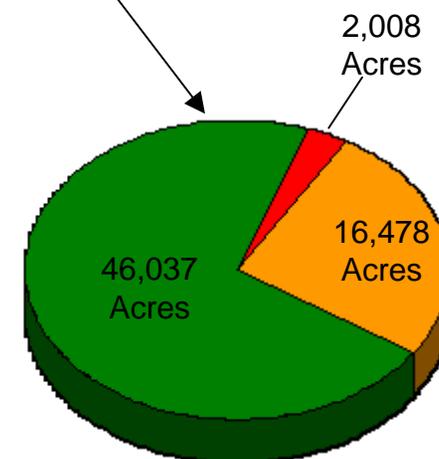
After



In this ~65,000 acre landscape view, with 54 new well pads...



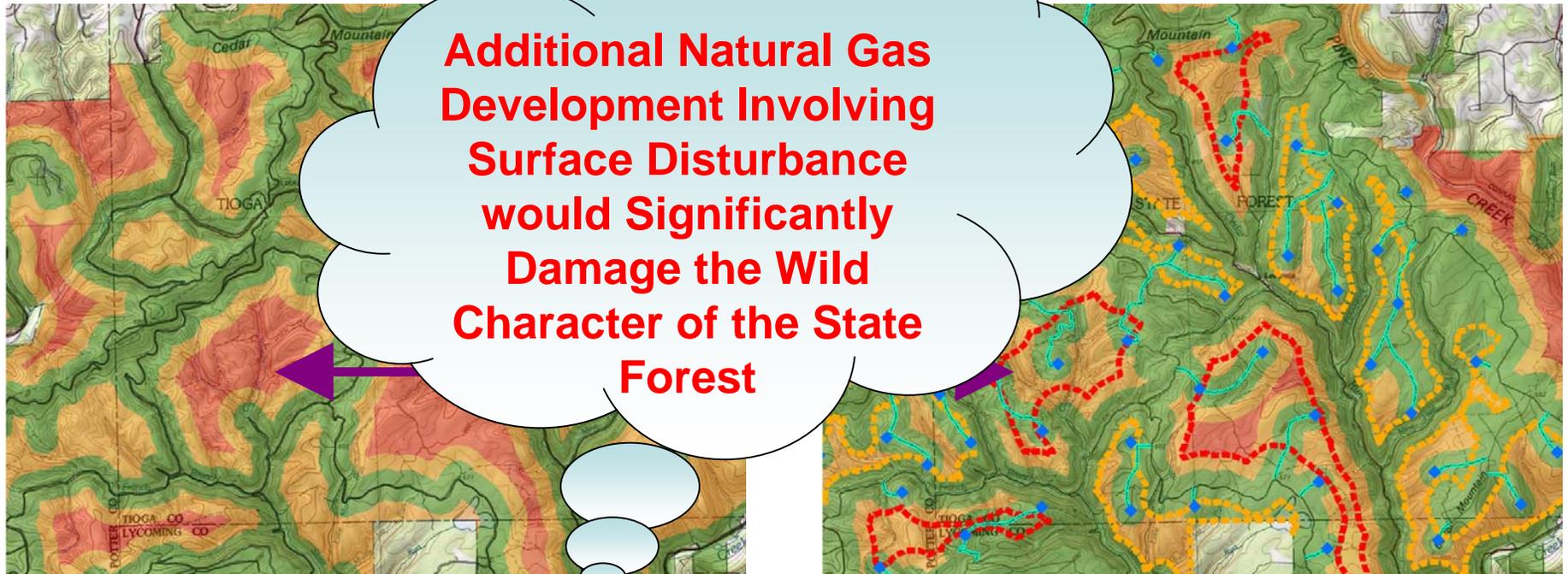
Zone	Net Gain/Loss
Primitive	-8,171
Semi-Primitive	-5,374
Semi-Developed	13,545



Modeling Change in the Forest's Wild Character

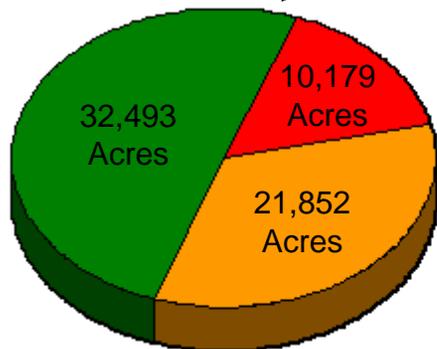
Before

After

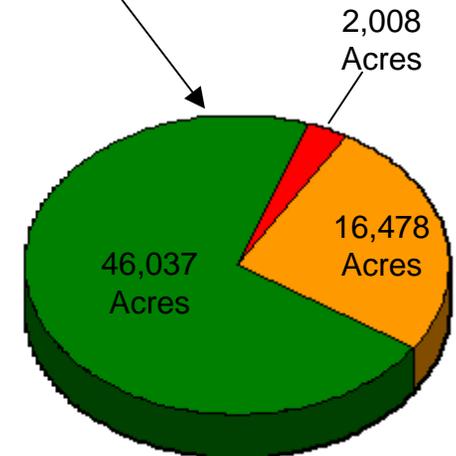


Additional Natural Gas Development Involving Surface Disturbance would Significantly Damage the Wild Character of the State Forest

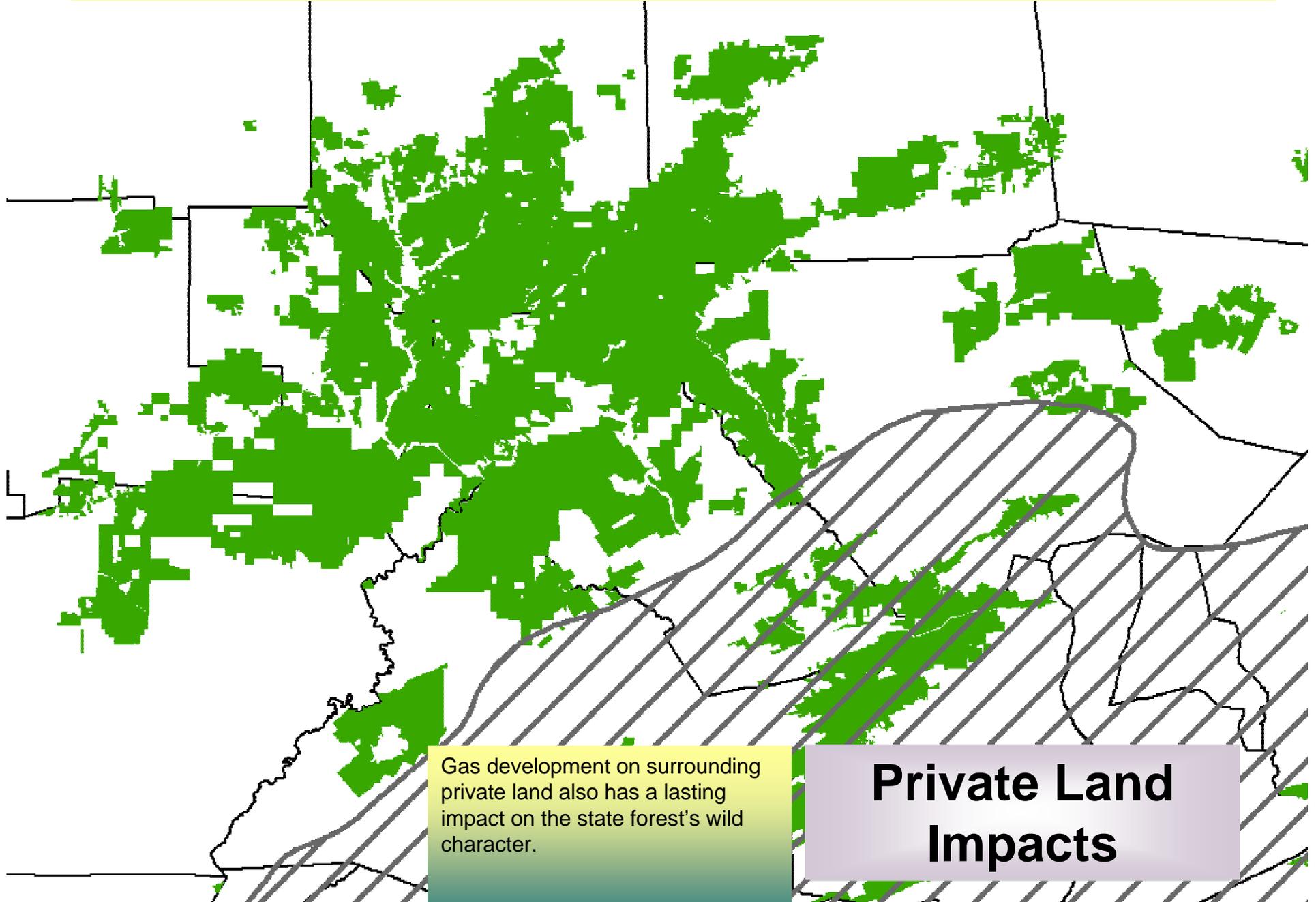
In this ~65,000 acre landscape view, with 54 new well pads...



Zone	Net Gain/Loss
Primitive	-8,171
Semi-Primitive	-5,374
Semi-Developed	13,545



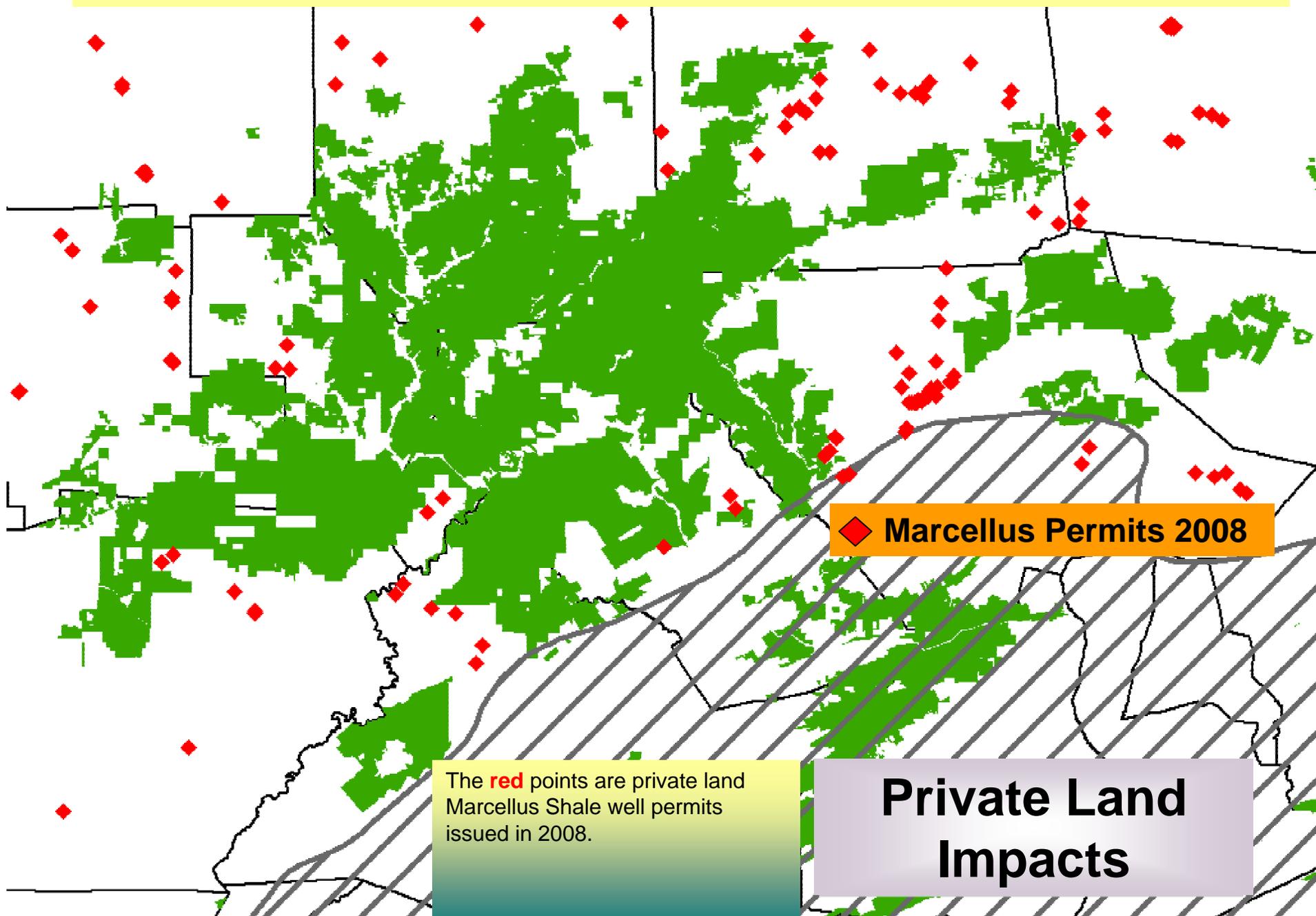
Maintaining the Forest's Wild Character



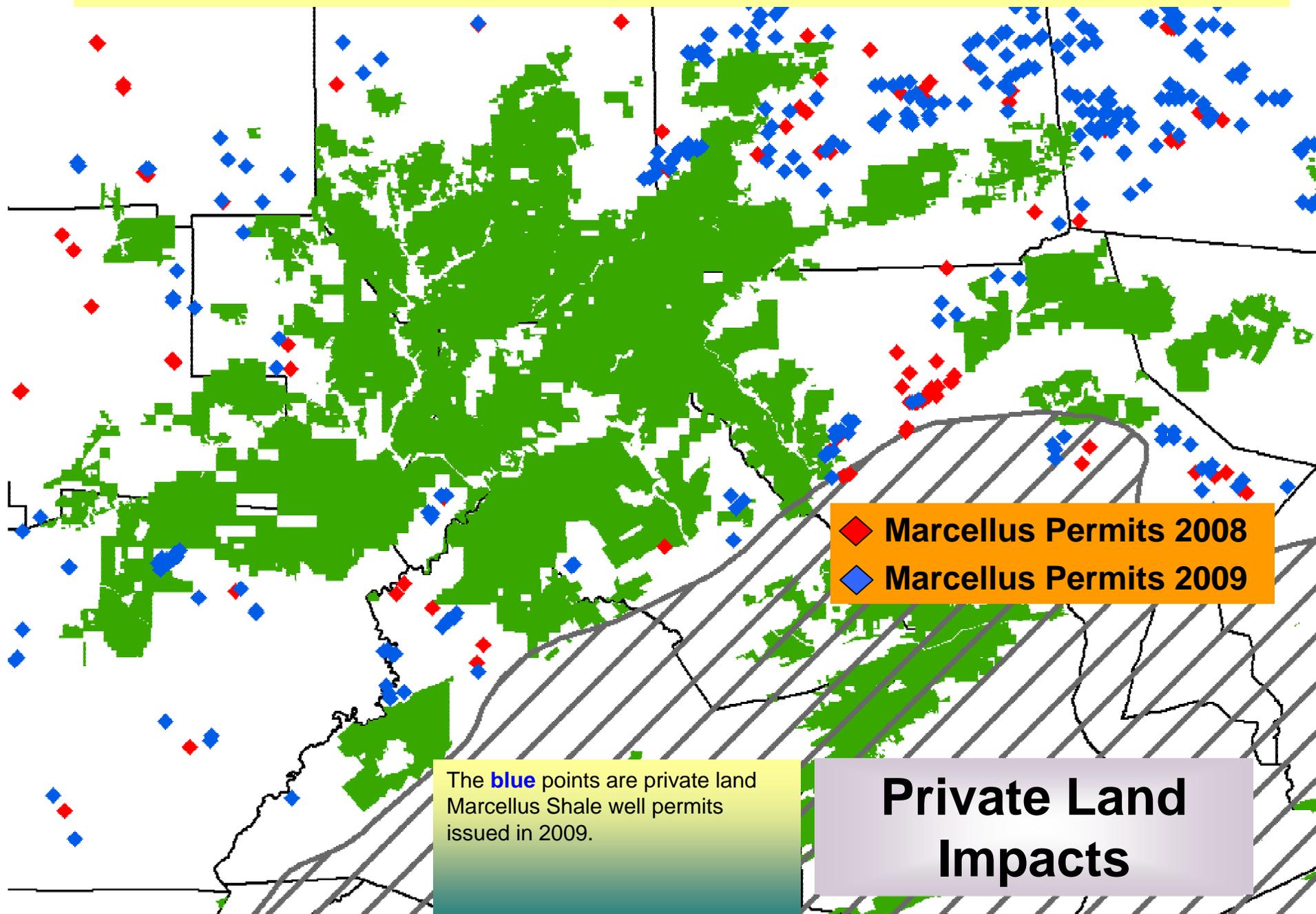
Gas development on surrounding private land also has a lasting impact on the state forest's wild character.

**Private Land
Impacts**

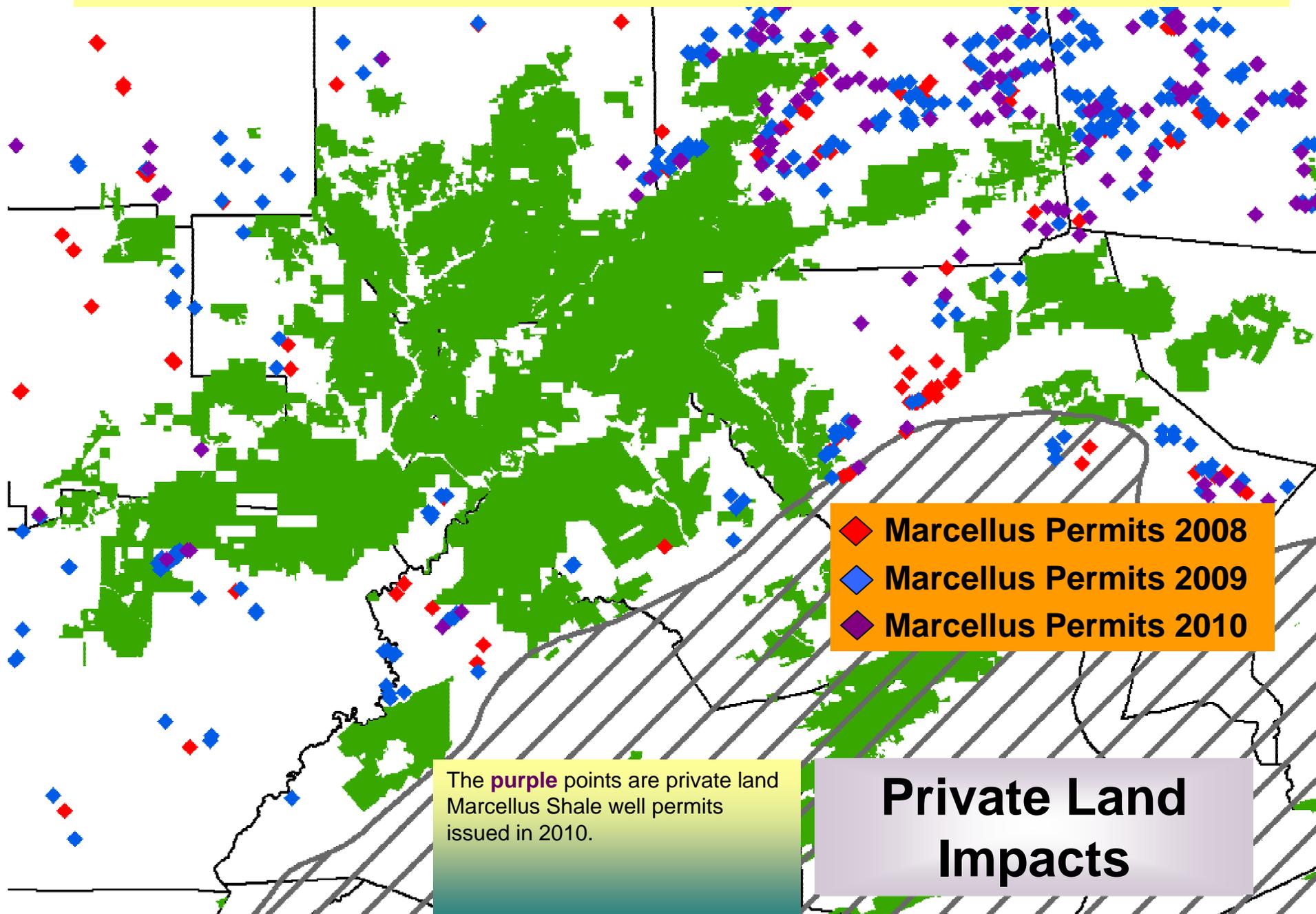
Maintaining the Forest's Wild Character



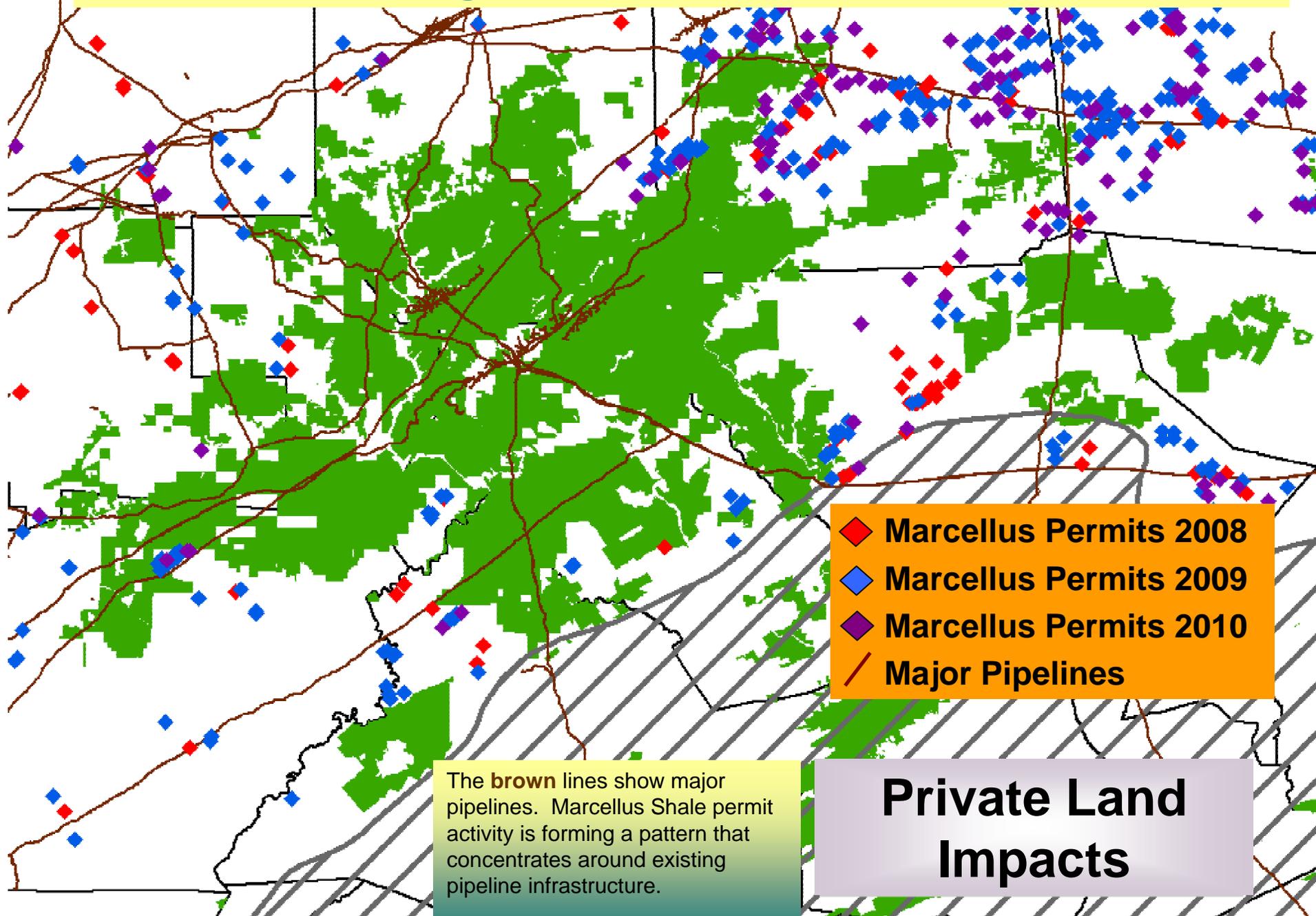
Maintaining the Forest's Wild Character



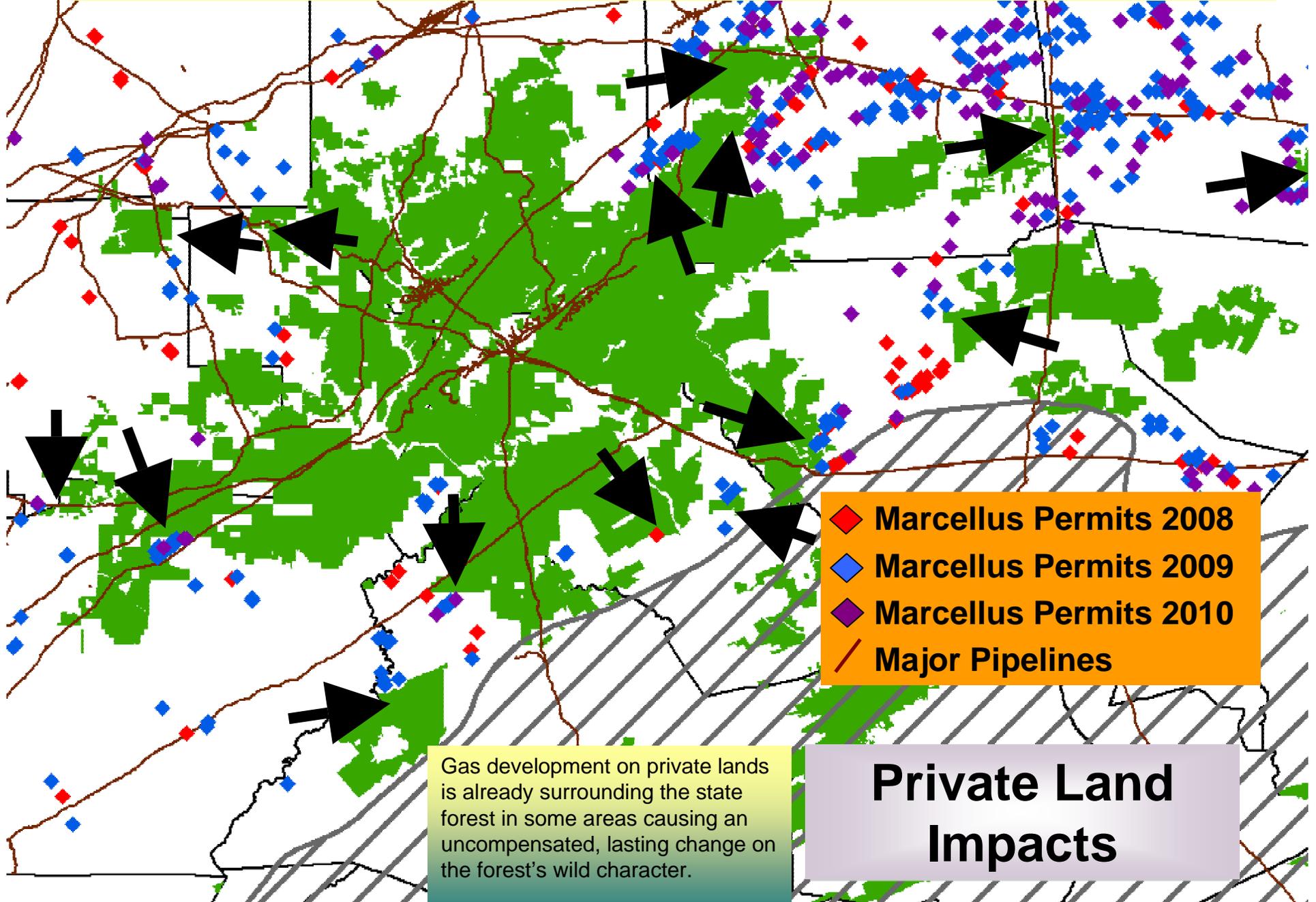
Maintaining the Forest's Wild Character



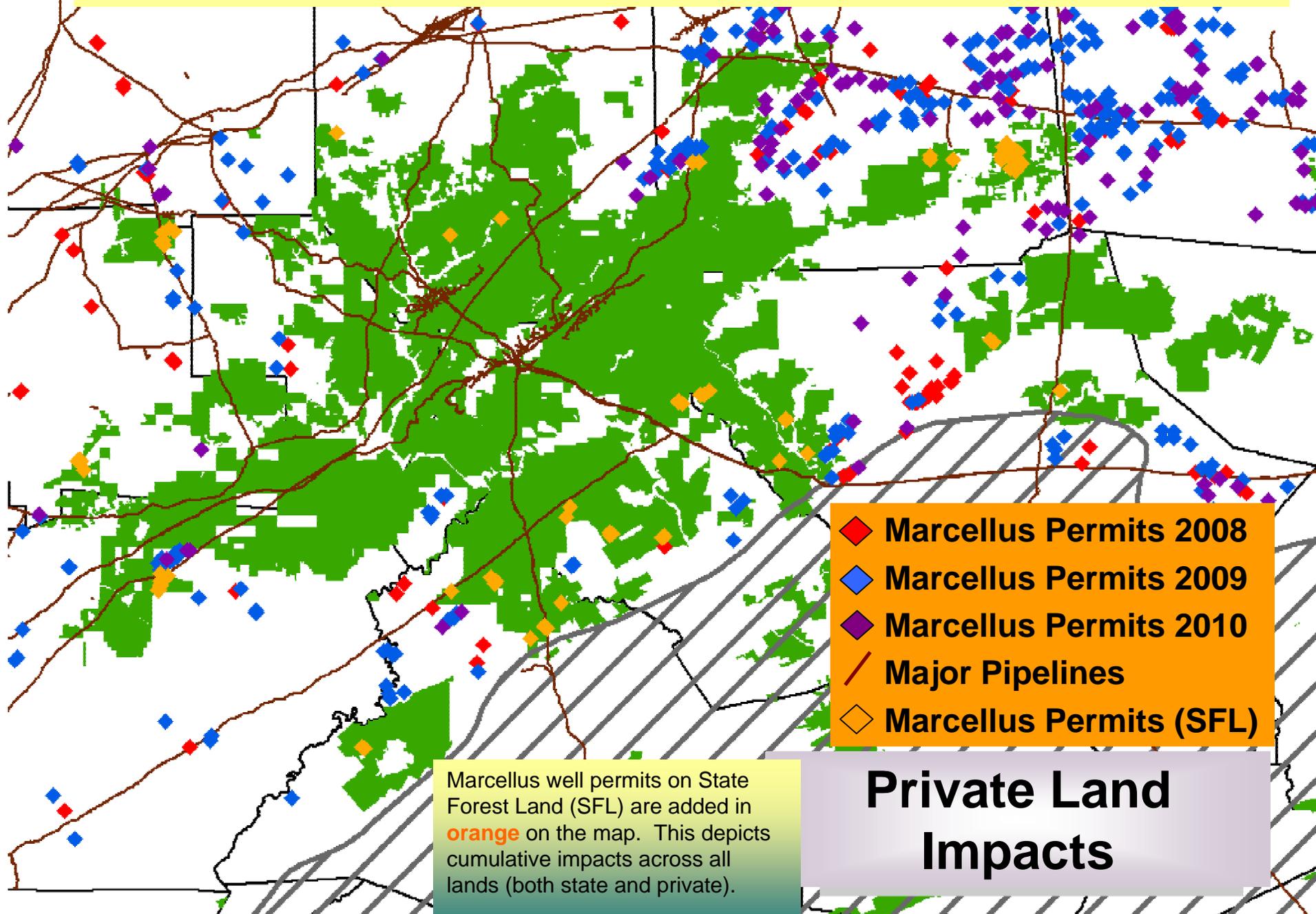
Maintaining the Forest's Wild Character



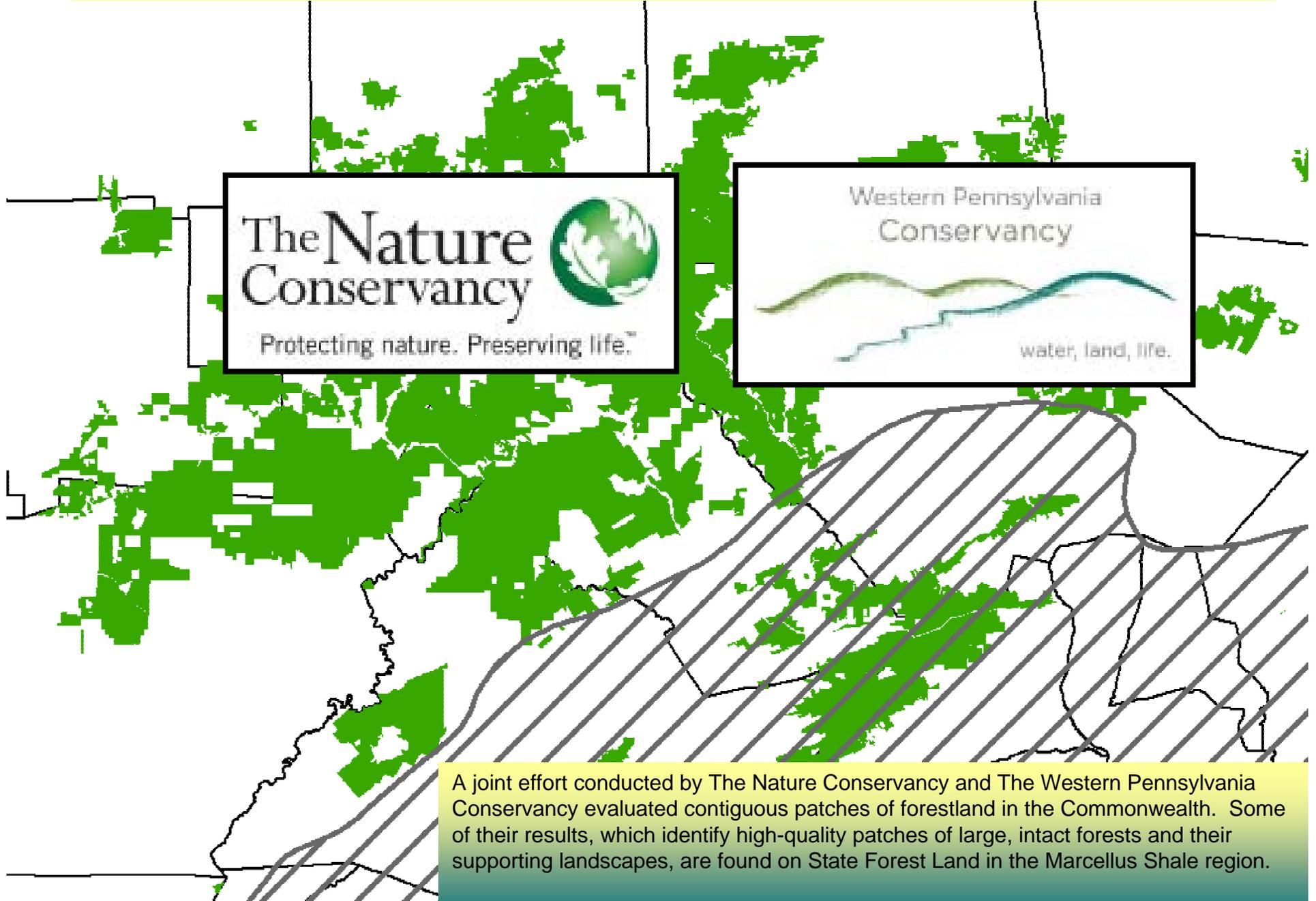
Maintaining the Forest's Wild Character



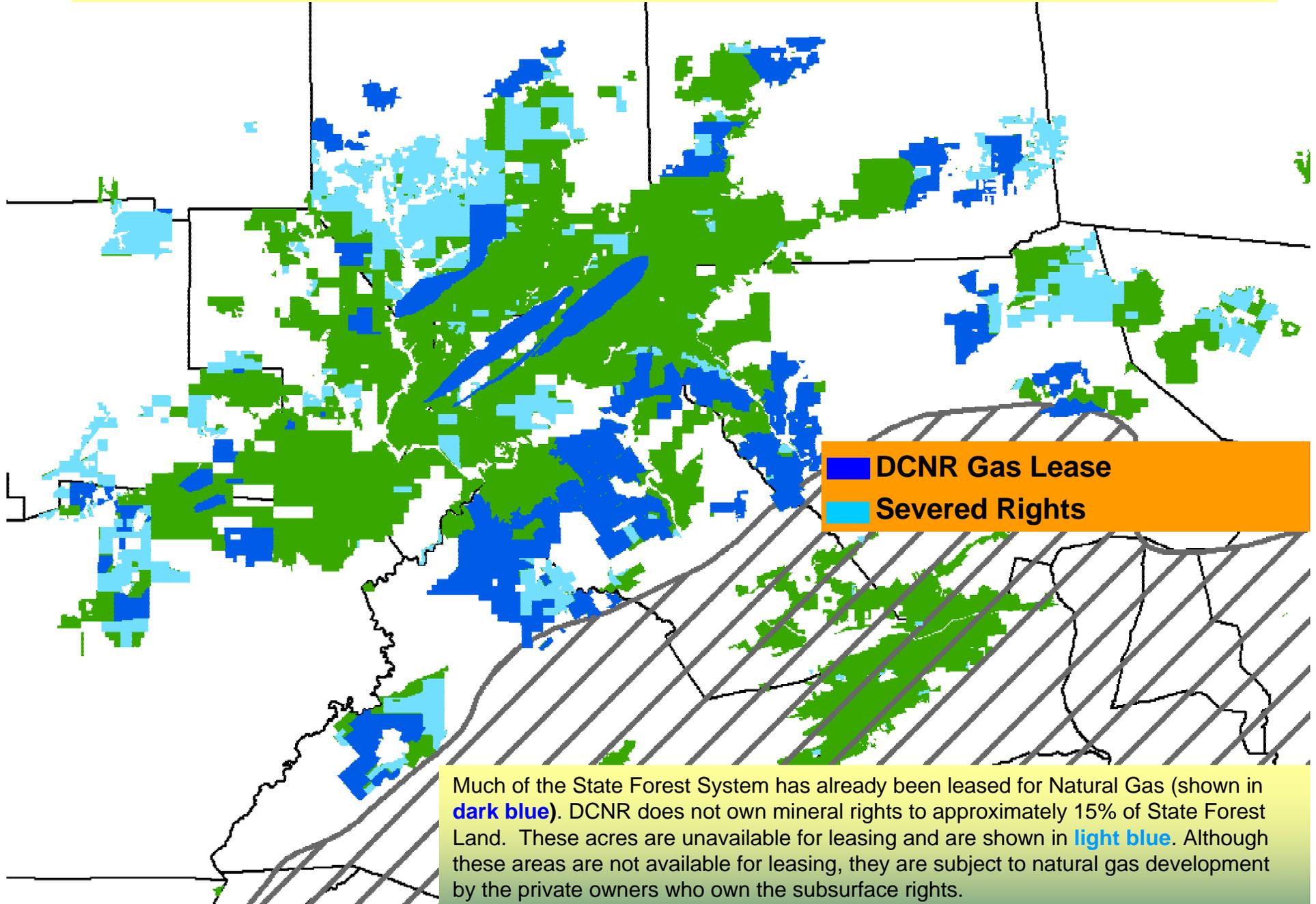
Maintaining the Forest's Wild Character



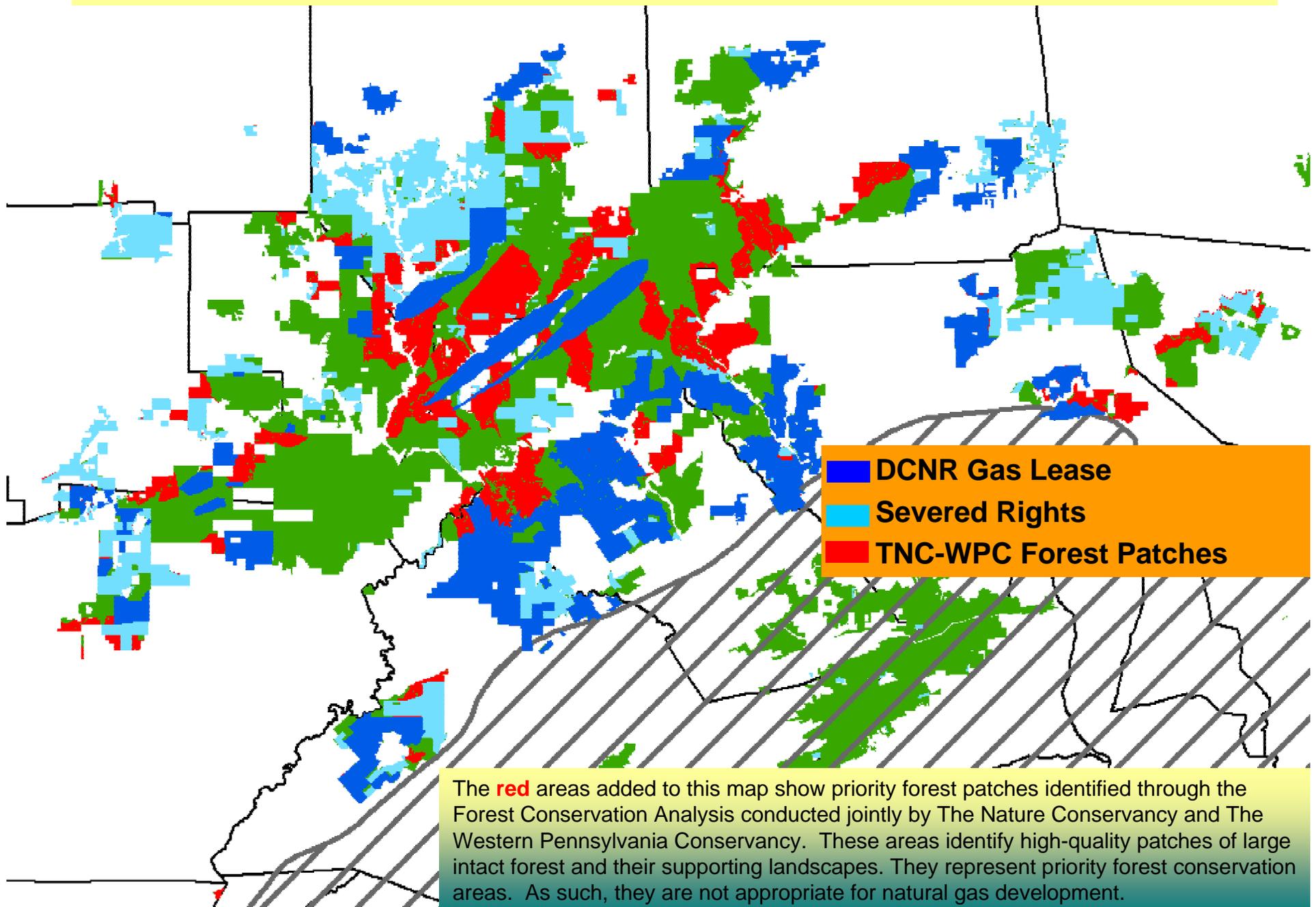
TNC-WPC Priority Forest Patches



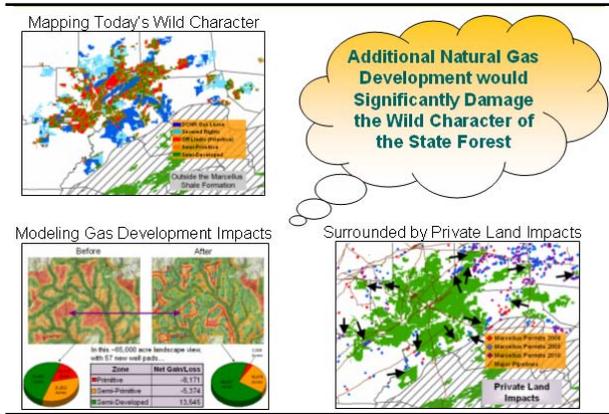
TNC-WPC Priority Forest Patches



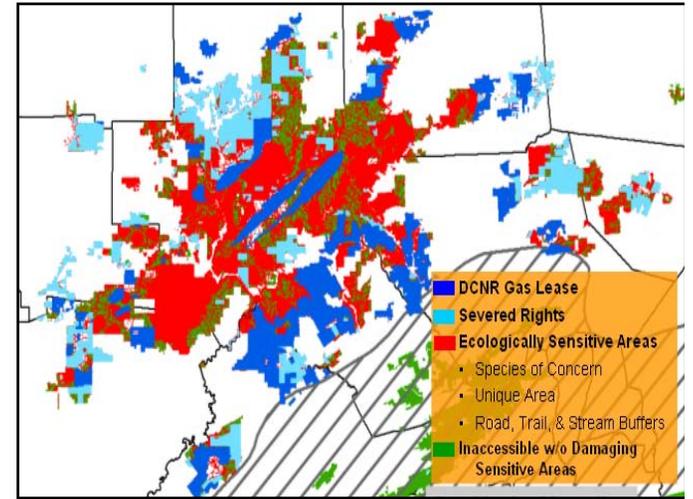
TNC-WPC Priority Forest Patches



Cumulative Assessment & Impacts

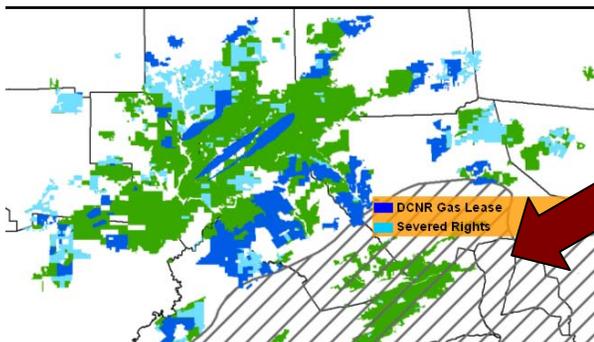


The Forest's Ecological Integrity

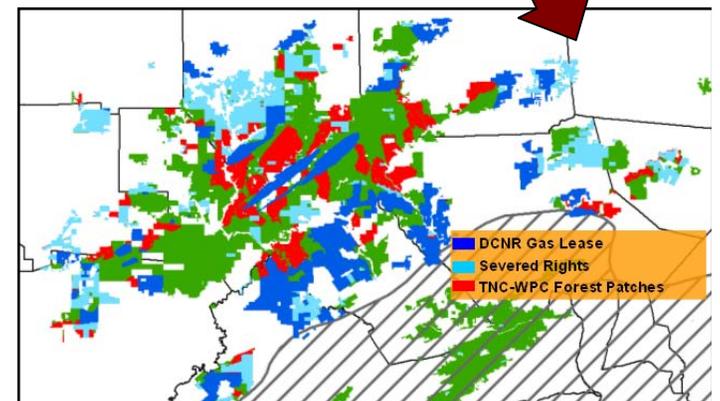


The Forest's Wild Character

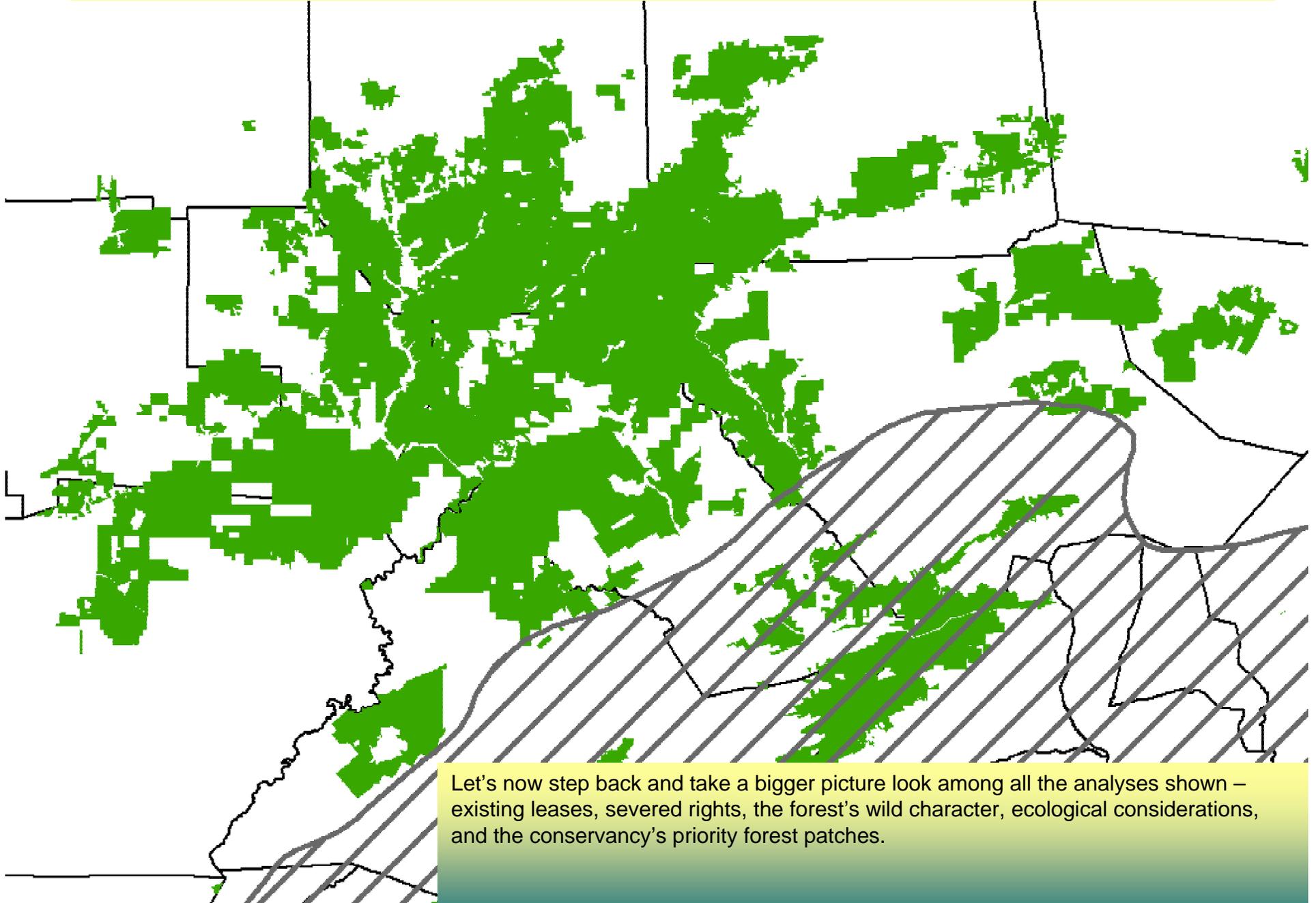
TNC-WPC Forest Patches



Existing Leases & Severed Rights

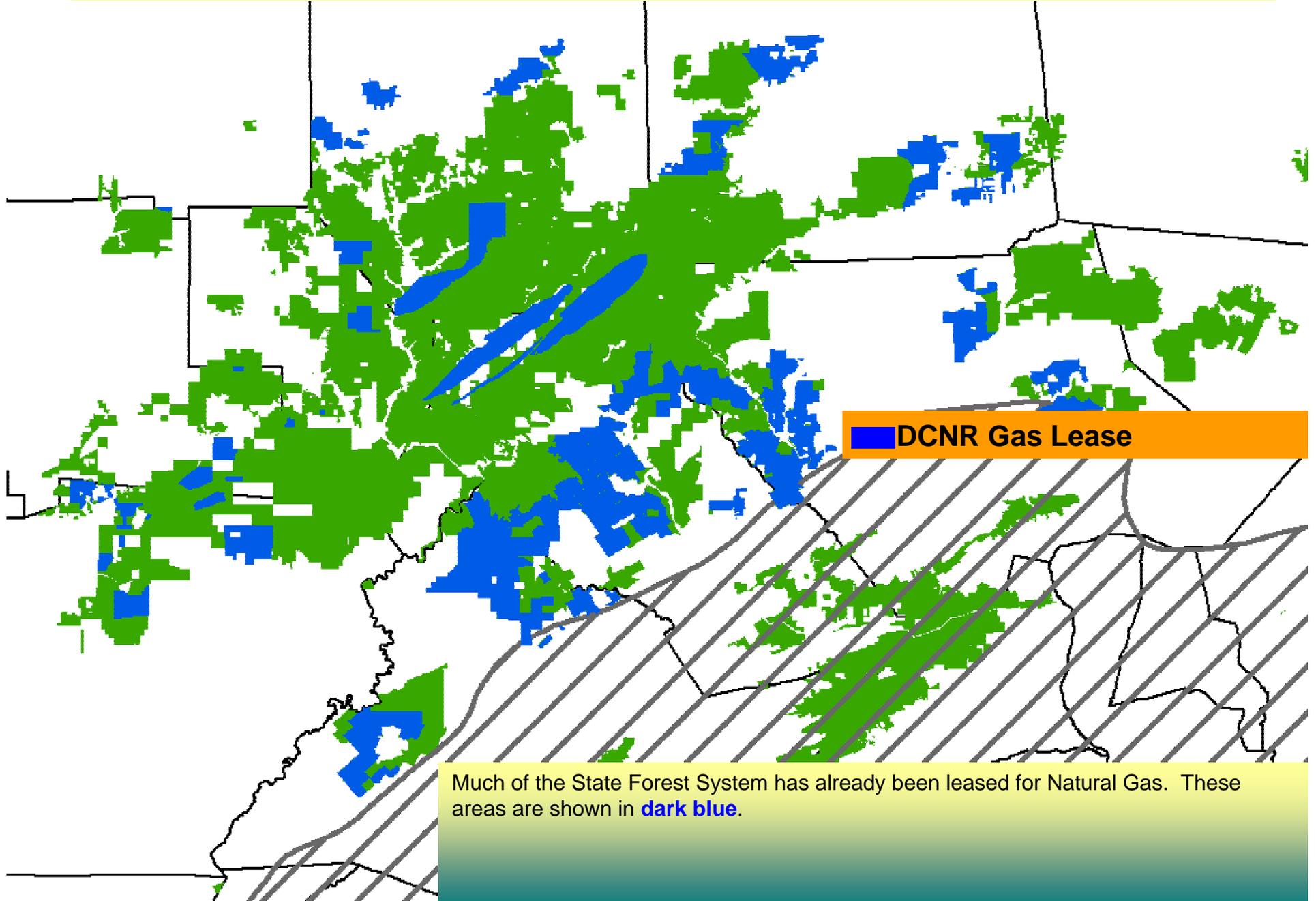


Cumulative Assessment & Impacts

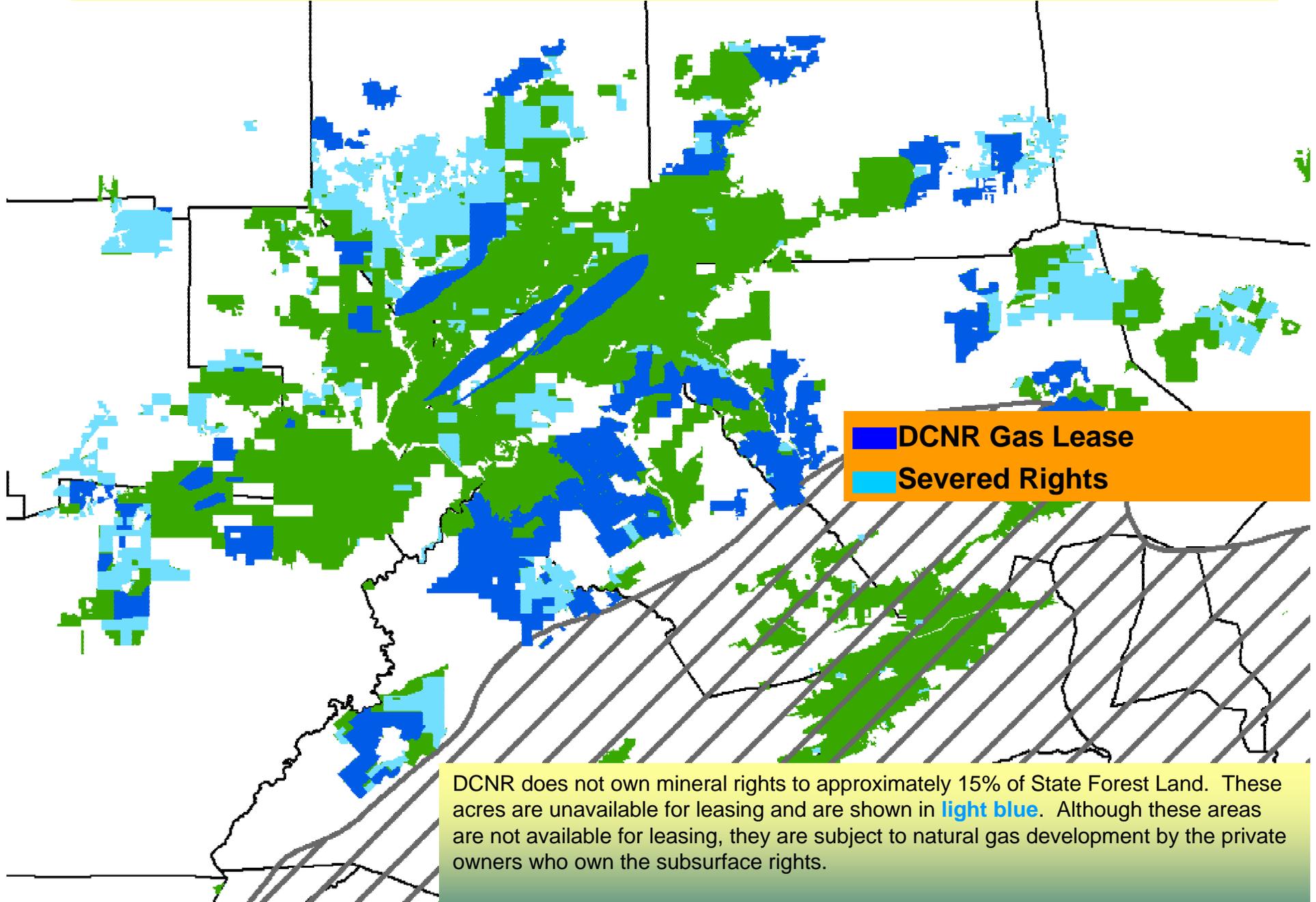


Let's now step back and take a bigger picture look among all the analyses shown – existing leases, severed rights, the forest's wild character, ecological considerations, and the conservancy's priority forest patches.

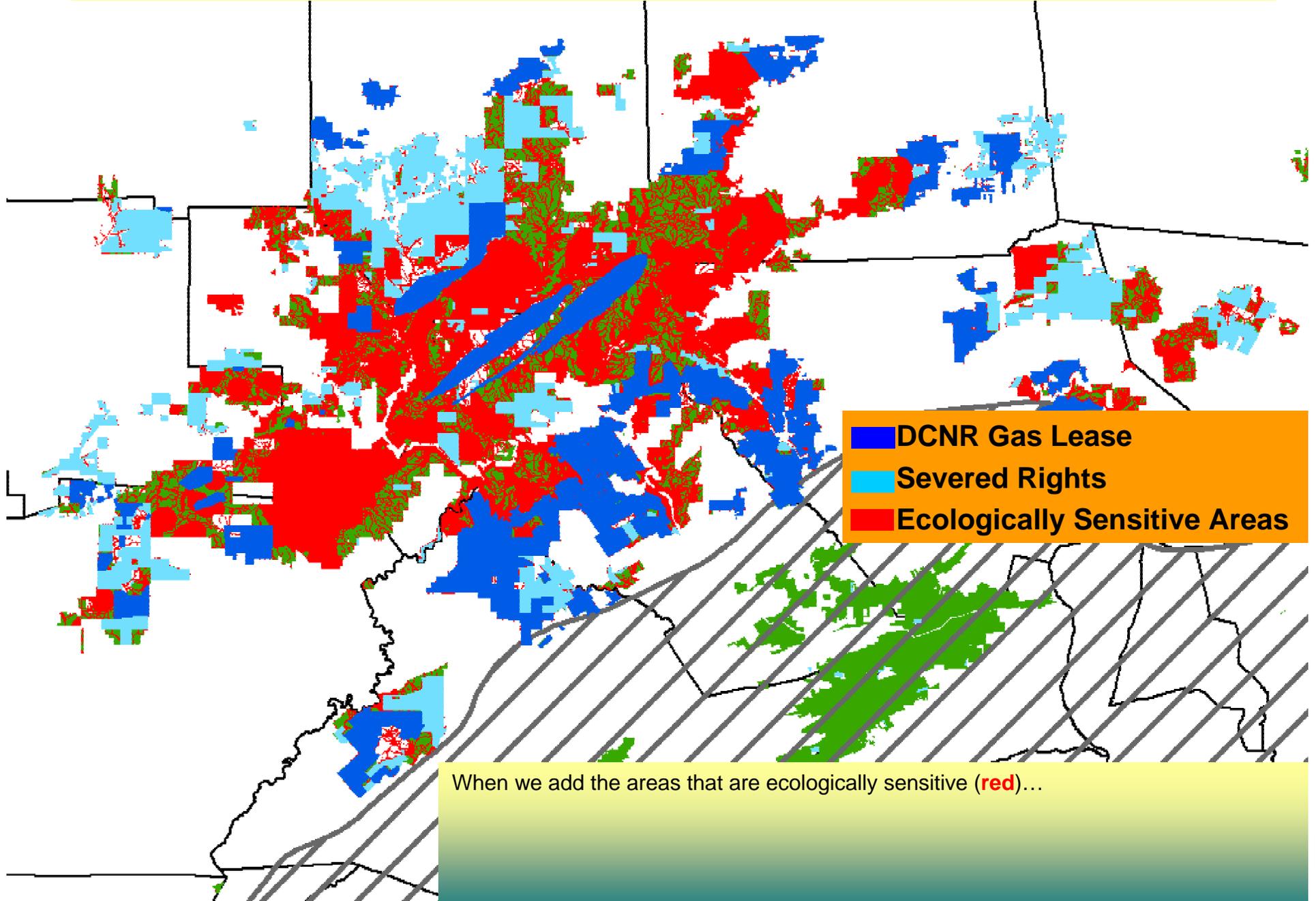
Cumulative Assessment & Impacts



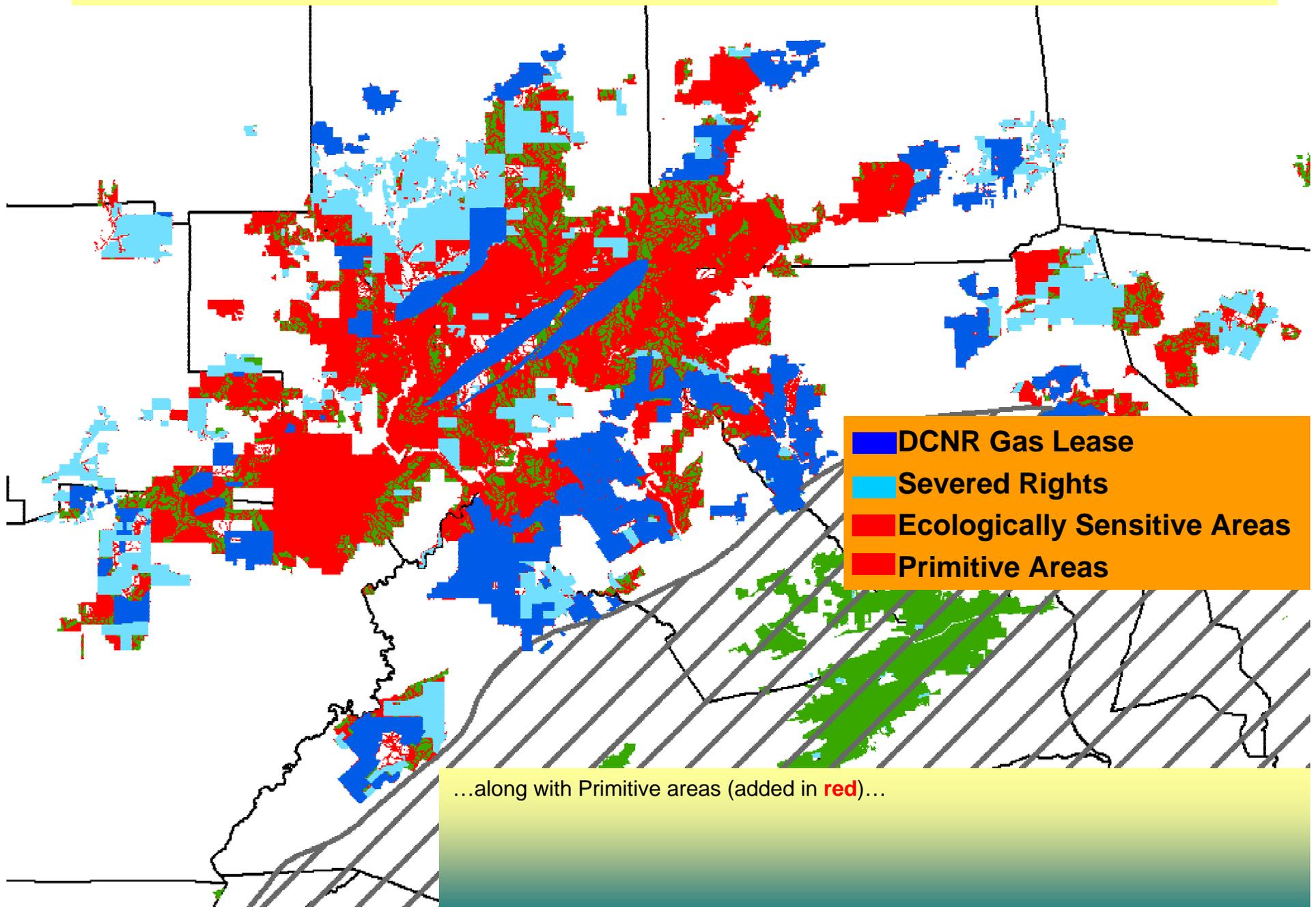
Cumulative Assessment & Impacts



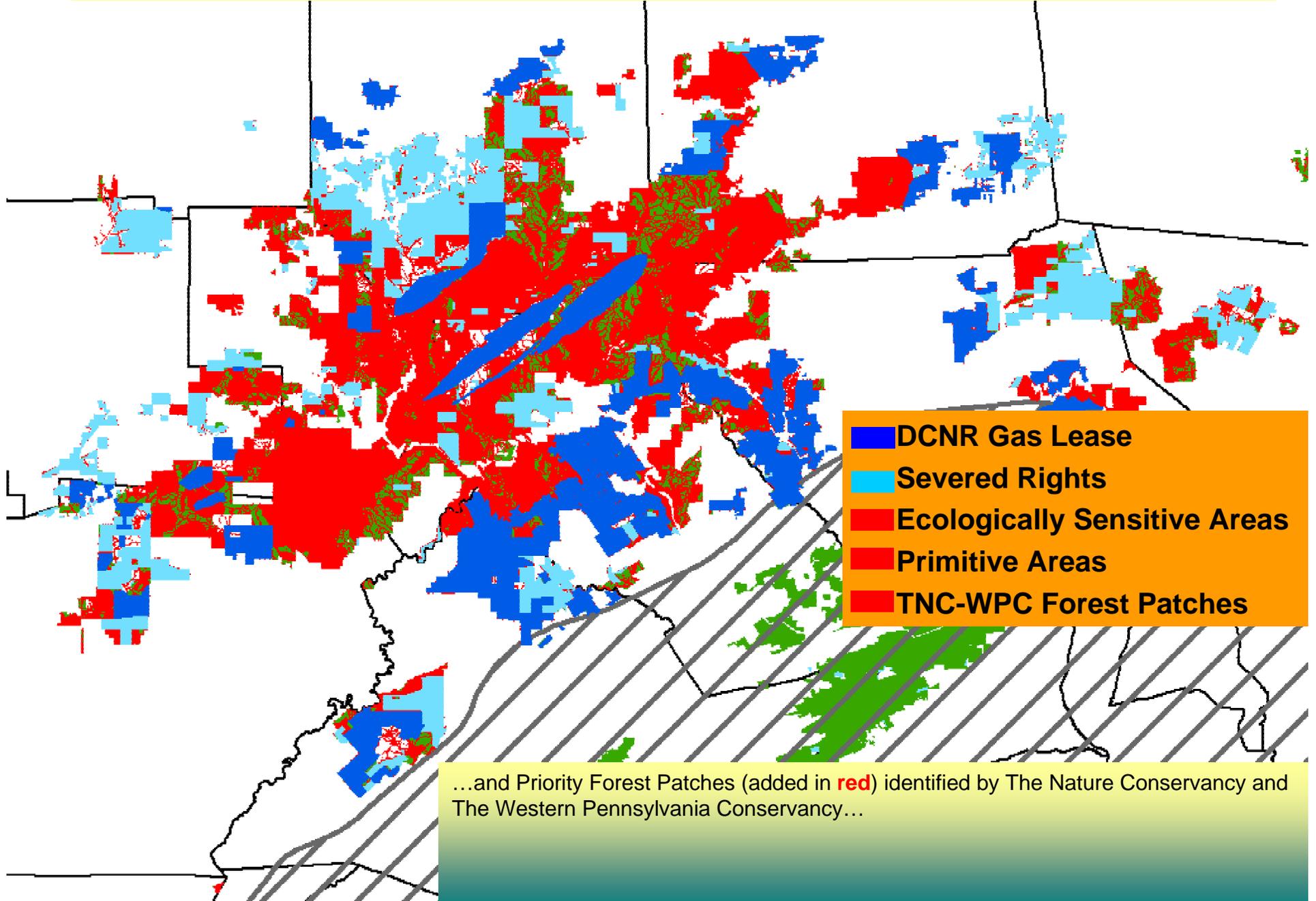
Cumulative Assessment & Impacts



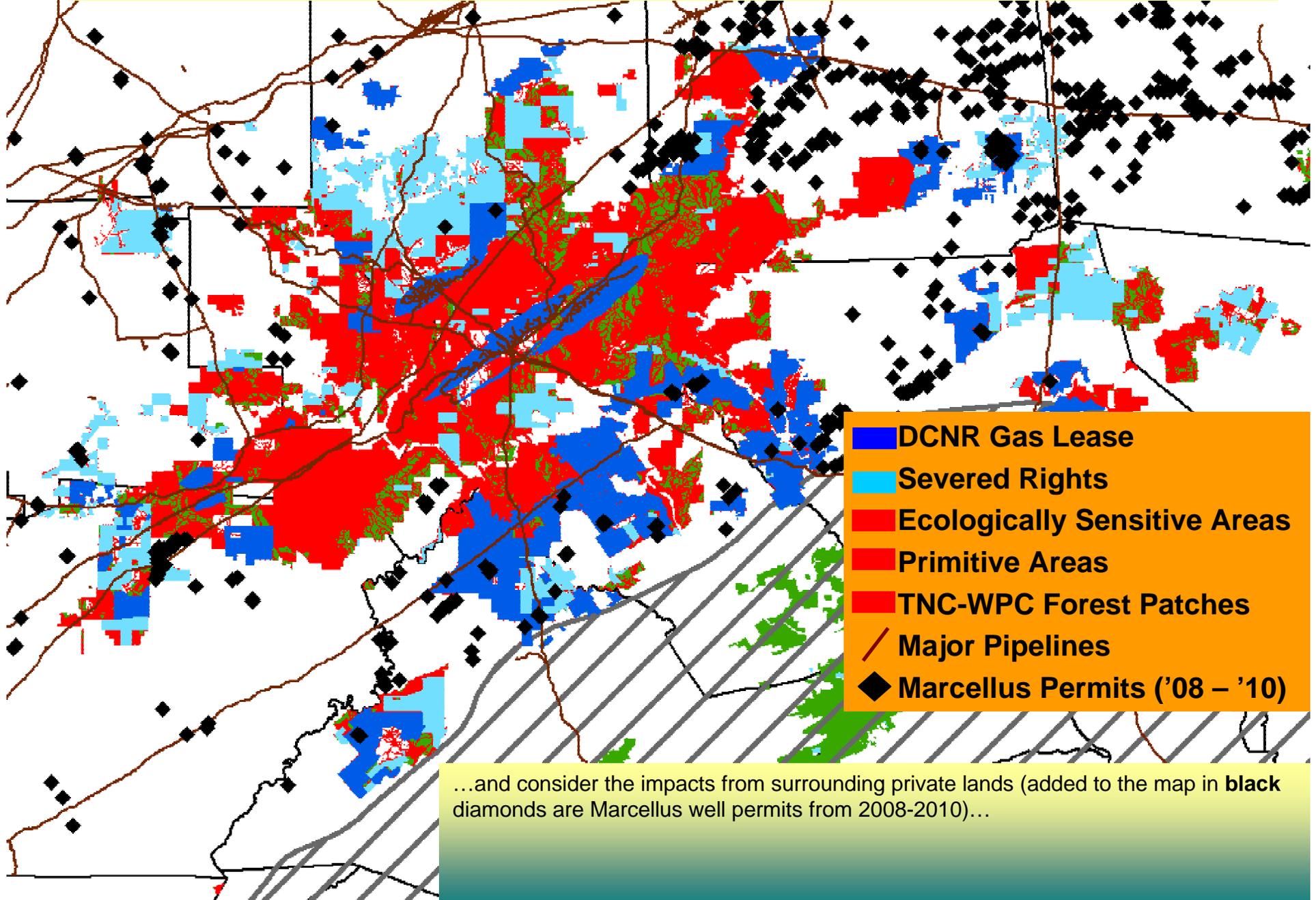
Cumulative Assessment & Impacts



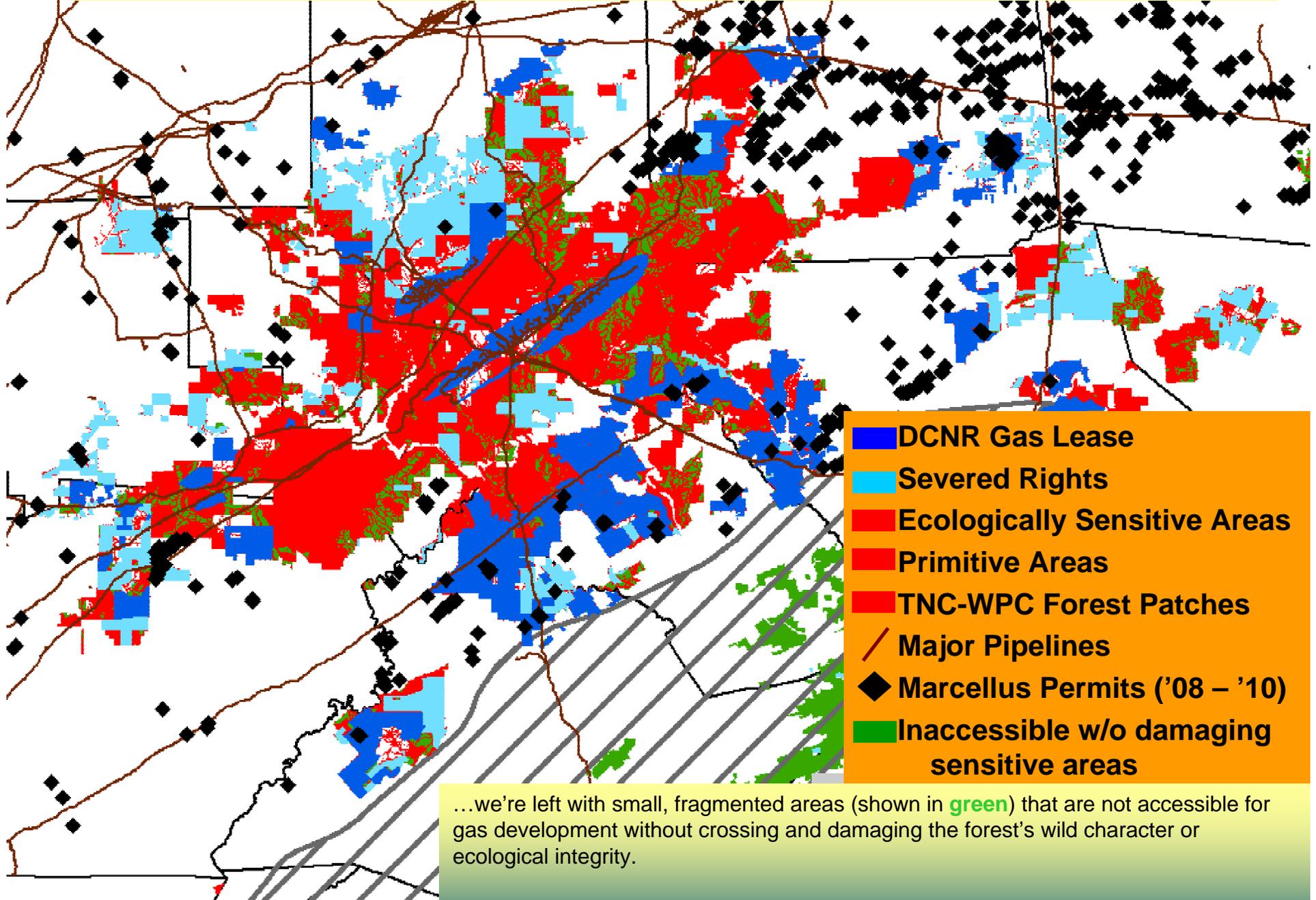
Cumulative Assessment & Impacts



Cumulative Assessment & Impacts



Cumulative Assessment & Impacts



Conclusion

1,500,000 acres

-700,000 acres

-702,500 acres

97,500 acres

-27,500 acres

70,000 acres

-49,600 acres

20,400 acres

-20,400 acres

0 acres

...in the marcellus shale region

...currently under lease / severed rights

...unleased in ecologically sensitive areas

...additional Primitive land

...additional TNC-WPC
forest patches

...inaccessible w/o damaging
sensitive areas

There are zero State Forest
Land acres suitable for
gas leasing involving
surface disturbance.