

FERC Docket# PF15-558-000

Originally sent as the scoping document from WCAS, this document has been updated to show results of 2015 and 2016 breeding seasons. Long-eared Owl signs have also been updated. Note the presence of many bird species not mentioned in the DEIS.

Washington Crossing Audubon Society believes that the proposed PennEast natural gas pipeline would inflict far-reaching environmental damage along the proposed route through the grasslands of Hunterdon and Mercer Counties, the Sourland Mountain and along the alternate Baldpate Mountain Route. As part of the federal regulatory review process, an exhaustive environmental impact study should be done, which would assess the impact on regional biodiversity and on regional streams and groundwater, particularly the impact on threatened and endangered bird species, Audubon Watchlist species, American Bird Conservancy Species of Conservation Concern and other threatened species, such as rapidly declining bats, pollinating insects, and amphibians. The results of such a study would clearly demonstrate the extensive potential damage to the environment along the proposed route.

The proposed pipeline should not encroach on any land tracts that have been preserved for their high biodiversity, high quality habitat, or rare species. Of special concern are the Sourland Mountain and its outlier Baldpate Mountain, which contain both high biodiversity and rare species.

The Sourland Mountain is of critical importance to migrating and breeding birds, including many species of conservation concern. The Sourland Mountain is the meeting place of Northern and Southern species and contains the largest continuous forest in central New Jersey attracting many interior forest breeding species, including fifteen species of conservation concern. Thirteen of these species are Nearctic-neotropical migrants. These species are either obligate interior forest breeding species or require large forest tracts for breeding success to avoid nest parasitism by the Brown-headed Cowbird. The New Jersey Endangered Breeding Red-shouldered Hawk breeds in the Sourlands. The Sourland Mountain Regional Ecosystem supports large populations of spring and fall migrants, including sixty-one species of conservation concern. Fifty species of conservation concern use the interior forest reserves, including forty-six species of Neotropical migrants.

The gravest threat to biodiversity today is the loss, degradation, and fragmentation of habitat. Bisecting intact forest with a pipeline right-of-way means more than the loss of a 50 to 200 foot swath of trees. Such a fragmentation of habitat increases the edge effect and allows invasive species to invade the forest interior, threatening and in some cases eliminating interior forest species. The Brown-headed Cowbird, a nest parasite, uses openings through the forest to increase access to the nests of forest-dwelling species, including Nearctic-Neotropical breeding birds. Invasive plant species use the same routes to colonize the forest, displacing native plants that sustain native wildlife. Because the right of way is permanent, these effects cannot be mitigated. The interior forest habitats are permanently degraded.

The proposed pipeline would also cross preserved farmlands, where the potential for environmental damage is just as serious. These farmlands, when properly managed, maintain habitat for rapidly declining grassland birds, which require a significant expanse of grassland to breed successfully, and for pollinating insects, necessary for most fruit and vegetable production. Disturbing this type of habitat would prove harmful to these already threatened species. Of special concern is the New Jersey threatened American Kestrel, a rapidly declining species in the state. The preserved farmlands of Hunterdon County are prime habitat for this species.

Baldpate Mountain has been cited as a preferred alternate route because of the existing power line right of way. While using existing rights-of-way is generally a less environmentally disruptive option, the geology, environmental sensitivity and ecological uniqueness of Baldpate Mountain makes it a poor choice.

Because of the extreme ecological sensitivity of Baldpate Mountain, Washington Crossing Audubon Society opposes routing the PennEast pipeline through the JCP&L power line cut that bisects Baldpate Mountain. An outlier of the Sourland Mountains, Baldpate Mountain contains some of the richest biodiversity in New Jersey. Southern and northern species meet at Baldpate, enriching the flora and fauna. Due to the high quality habitat, including areas of intact understory, and the mingling of southern and northern species, Baldpate Mountain has the highest concentration of breeding Neotropical migrants in New Jersey. The thirty-one Neotropical breeding species include thirteen warblers and the Yellow-breasted Chat, two tanagers, three vireos and two thrushes. Twenty-eight breeding Neotropical migrant species are ranked by the American Bird Conservancy (ABC) as birds of conservation concern. Baldpate is also an important migratory stop for Neotropical birds. Fifty species of Neotropical migrants of conservation concern use Baldpate Mountain as a migratory stop. A total of 170 species have been reported to eBird at Baldpate; sixty-one of these are ABC species of conservation concern that use Baldpate for breeding, a migratory stop or as part of a resident territory. The New Jersey threatened Long-eared Owl has winter roosts at Baldpate Mountain.

Because Baldpate Mountain is long and narrow, it is highly sensitive to disruption from activity on the power line cut that bisects the forest lengthwise. Of special concern is noise from blasting and construction that would penetrate deeply into the forest, interfering with vocal communication between birds at a critical time during the breeding season. Construction along the power line cut and especially extending the width of the power line cut would destroy or degrade adjacent breeding habitat along the length of the mountain. Because Baldpate breeding territories are saturated, these birds cannot move further back into the interior forest if disturbed. There is no place for the displaced birds to go. Blue-winged and Chestnut-sided Warblers, species of conservation concern that breed at the forest-power line ecotone, would be especially affected. Increasing the width of the power line would also extend the edge

effect further into the core forest, allowing increased access for brown-headed cowbirds, a nest parasite, and invasive plant species. The ecosystem at Baldpate is intact but stressed, making Baldpate sensitive to new disturbances.

The blasting necessary to penetrate the extremely hard diabase substrate has the potential to affect the springs that feed the creeks that originate on Baldpate, disrupting their flow and the animals that depend on them, including the breeding Louisiana Waterthrush, a species of conservation concern.

The potential damage to the breeding birds of conservation concern cannot be mitigated as there is no other high quality habitat for relocation of these species in central New Jersey. The Sourland Mountain habitat is similarly saturated and the areas adjacent to Baldpate are too degraded to support healthy populations of birds that require closed canopy, healthy understory or interior forest. Healthy forest habitat takes decades to develop, considerably longer than the lifetime of the forest breeding birds, making mitigation impossible. The affected species are of conservation concern because they are declining at an unsustainable rate or their habitat is being destroyed or degraded at an unsustainable rate.

The power line cut predates the requirement for an environmental impact statement. Considering the ecological sensitivity of Baldpate Mountain, the power line cut should have never been placed there. A thorough biological inventory and environmental impact statement would clearly show why. The damage to the fragile but intact Baldpate Mountain ecosystem should not be compounded by allowing PennEast access for their pipeline.

Our preserved lands are not empty spaces on a map. These properties have been preserved for their value in protecting biodiversity, maintaining air and water quality, and sustaining small local farming operations. Furthermore, these lands add immeasurably to the quality of life for the thousands of people who visit them, who live on or near them, or who work on or near them. Often these lands and farmlands were preserved with public money voted expressly for such a purpose. They do not belong to PennEast, and they certainly should not be under consideration for siting a pipeline. These lands provide valuable environmental and agricultural benefits, as well as intangible personal benefits to all of us, benefits that are irreplaceable and that are meant to continue in perpetuity.

WCAS opposes any pipeline that would be sited on preserved lands or farmlands. Because of their importance to birdlife both the Sourland Mountain and Baldpate Mountain have been designated as New Jersey Important Bird Areas (IBA's). To minimize the environmental impact of the proposed pipeline, IBA's should be especially avoided. The findings of a properly executed environmental assessment must be an integral part of the federal regulatory review process, so that no harm will be done to our wild lands and farmlands. We urge FERC to rule "no action" on both the proposed Sourland Mountain route and the alternate Baldpate route.

Baldpate Mountain Birds of Conservation Concern: Status

Species	Watchlist Status	ABC Status	NJ Status
Red-shouldered Hawk		green	E BR
Yellow-billed Cuckoo		yellow	RP
Black-billed Cuckoo		orange	RP
Common Nighthawk		yellow	SC
Barred Owl		green	T
N. Long-eared Owl*		yellow	T
Eastern Screech Owl		yellow	RP
Chimney Swift		yellow	RP
Belted Kingfisher		yellow	SC
Red-headed Woodpecker	yellow	orange	T
Northern Flicker		yellow	RP
Olive-sided Flycatcher	yellow	orange	U
Eastern-wood Peewee		yellow	RP
Acadian Flycatcher		yellow	RP
Yellow-throated Vireo		yellow	RP
Blue-headed Vireo		yellow	SC
Warbling Vireo		yellow	S
Philadelphia Vireo		yellow	S
N. Rough-winged Swallow		yellow	S
Carolina Chickadee		yellow	S
Veery		yellow	SC
Gray-cheeked Thrush		yellow	SC
Swainson's Thrush		yellow	S
Wood Thrush	yellow	orange	RP
Brown Thrasher		yellow	RP
Bay-breasted Warbler	yellow	yellow	S
Prairie Warbler	yellow	orange	RP
Cerulean Warbler	yellow	orange	SC
Prothonotary Warbler	yellow	orange	RP
Kentucky Warbler	yellow	orange	SC
Canada Warbler	yellow	orange	SC

Ovenbird		yellow	D
Worm-eating Warbler		yellow	RP
Louisiana Waterthrush		yellow	RP
Northern Waterthrush		yellow	S
Blue-winged Warbler	yellow	orange	RP
Golden-winged Warbler		orange	SC
Black-and-white Warbler		yellow	RP
Prothonotary Warbler		yellow	RP
Tennessee Warbler		yellow	D
Nashville Warbler		yellow	S
Connecticut Warbler		orange	D
Mourning Warbler		yellow	INC
Kentucky Warbler		orange	SC
Common Yellowthroat		yellow	D
Hooded Warbler		yellow	RP
American Redstart		yellow	INC
Cape May Warbler		yellow	S
Northern Parula		yellow	SC
Blackburnian Warbler		yellow	RP
Chestnut-sided Warbler		yellow	S
Bay-breasted Warbler		yellow	S
Blackpoll Warbler		yellow	D
Black-throated blue Warbler		yellow	RP
Yellow-throated Warbler		yellow	RP
Prairie Warbler		yellow	RP
Black-throated Green Warbler		yellow	SC
Canada Warbler		orange	SC
Wilson's Warbler		yellow	S
Yellow-breasted Chat		yellow	SC
Eastern Towhee		yellow	RP
Summer Tanager		yellow	RP
Scarlet Tanager		yellow	RP
Rose-breasted Grosbeak		yellow	RP
Indigo Bunting		yellow	RP
Baltimore Oriole		yellow	RP

Baldpate Mountain Birds of Conservation Concern

Species

eBird

BFL

Baldpate

	reported	Study	Breeding Study
Red-shouldered Hawk	resident	no response	
Yellow-billed Cuckoo	breeding,migrant	NA	confirmed
Black-billed Cuckoo	migrant	NA	
Common Nighthawk	migrant	NA	
Barred Owl	May,possible breeding	NA	
N. Long-eared Owl*			
Eastern Screech Owl	resident	NA	
Chimney Swift	breeding, migrant	NA	confirmed
Belted Kingfisher	migrant	NA	
Red-headed Woodpecker	resident	confirmed	
Northern Flicker	resident	NA	confirmed
Olive-sided Flycatcher	migrant	NA	
Eastern-wood Peewee	breeding,migrant	confirmed	confirmed
Acadian Flycatcher	breeding,migrant		
Yellow-throated Vireo	breeding,migrant	confirmed	confirmed
Blue-headed Vireo	migrant	NA	
Warbling Vireo	breeding, migrant	NA	
Philadelphia Vireo	migrant	NA	
N. Rough-winged Swallow	breeding, migrant	NA	
Carolina Chickadee	resident	NA	hybridizes
Veery	breeding,migrant	confirmed	confirmed
Gray-cheeked Thrush	migrant	NA	
Swainson's Thrush	migrant	NA	
Wood Thrush	breeding,migrant	confirmed	confirmed
Brown Thrasher	breeding	NA	
Bay-breasted Warbler	migrant	NA	
Prairie Warbler	breeding,migrant	NA	
Cerulean Warbler	migrant in recent years	first week only	
Prothonotary Warbler	migrant	first week only	
Kentucky Warbler	breeding	confirmed	confirmed
Canada Warbler	migrant	NA	
Ovenbird	breeding,migrant	NA	confirmed
Worm-eating Warbler	breeding,migrant	confirmed	confirmed
Louisiana Waterthrush	breeding,migrant	no response	confirmed
Northern Waterthrush	migrant	NA	
Blue-winged Warbler	breeding, migrant	NA	confirmed
Golden-winged Warbler	migrant	NA	
Black-and-white Warbler	breeding,migrant	NA	confirmed
Prothonotary Warbler	migrant	first week only	
Tennessee Warbler	migrant	NA	
Nashville Warbler	migrant	NA	

Connecticut Warbler	migrant	NA	
Mourning Warbler	migrant	NA	
Kentucky Warbler	breeding	confirmed	confirmed
Common Yellowthroat	breeding,migrant	NA	confirmed
Hooded Warbler	breeding, migrant	confirmed	confirmed
American Redstart	breeding, migrant	NA	confirmed
Cape May Warbler	migrant	NA	
Northern Parula	migrant	no response	
Blackburnian Warbler	migrant	NA	
Chestnut-sided Warbler	breeding, migrant	NA	confirmed
Bay-breasted Warbler	migrant	NA	
Blackpoll Warbler	migrant	NA	
Black-throated blue Warbler	migrant	NA	
Yellow-throated Warbler	migrant	NA	
Prairie Warbler	breeding,migrant	NA	confirmed
Black-throated Green Warbler	migrant	NA	
Canada Warbler	migrant	first week only	
Wilson's Warbler	migrant	NA	
Yellow-breasted Chat	breeding,migrant	NA	confirmed
Eastern Towhee	breeding,migrant	NA	confirmed
Summer Tanager	breeding	NA	confirmed
Scarlet Tanager	breeding,migrant	NA	confirmed
Rose-breasted Grosbeak	breeding,migrant	NA	confirmed
Indigo Bunting	breeding, migrant	NA	confirmed
Baltimore Oriole	breeding,migrant	NA	confirmed

New Jersey Threatened and Endangered Species in bold print.

*Long-eared Owl pellets found in cedars under multiple trees indicating a winter roosting site.

Because of sensitivity to disturbance, owl roosting sites are generally reported in ebird as “hidden”, accessible to Cornell Laboratory of Ornithology researches only.

Owl Signs in Cedar Grove on North Side of Baldpate

March 8 2016 in cedars near switch-back trail on north side of Baldpate, south of powerline. 4 cedars has significant fresh white-wash at the base. 5 cedars had old white-wash at the base. One cedar had a decayed pellet at the base. The rodent bones in the pellet were not heavily eroded, indicating owl, not hawk. The pellet dimensions were 1.8-2 cm width and 3.2 cm length, Long-eared Owl range (1.1 -2.5 cm W & 1.9-3.2 cm L).

Owl Signs in Cedar Grove on South Side of Baldpate:

In January 2013, Long-eared Owls roosted in cedars on southeast side of Baldpate: Extensive whitewash and numerous owl pellets were found under multiple trees near the Blue Trail indicating a colony of Long-eared Owls. Photographed and measured characteristic pellet from fresher group of pellets. I returned to the site with Mercer county naturalist Jenn Rogers and Tyler Christensen. We again found numerous owl pellets under multiple trees.

Long-eared Owl Pellet. Baldpate Mountain. January 21, 2013.



Pellet measures 2.1 cm W X 2.2 cm L. Measurements taken from picture.

Reference: Long-eared Owl pellets: 1.1-2.5 cm W X 1.9-3.2 cm L. Mark Elbroch and Eleanor Marks, *Bird Tracks and Signs: A Guide to North American Species*. p. 180. Stackpole Books. 2001.

Long-eared Owl Signs on Baldpate Mountain

GPS location of pellets were reported to the New Jersey non-game Fish and Wildlife division but removed from this document to protect the owls.

Owl signs in pine woods on north side of Baldpate on March 22, 2016:

Pellet #1 3177, 3178

Pellet #2 3183, 3188

Pellet #3 covered by white wash 3189

Pellet #4 3193 2.4 X 2.9 cm.

Pellets #5 & #6 3201 #5 1.7 X 3.7 cm, #6 1.5 X 2.6 cm N

#6 3197 shows bones. The non-eroded condition of the pellets' bones indicate owl pellets. Because of their stronger stomach acid, bones in hawk pellets are strongly eroded.

Pellets #1-3 too degraded to measure.

From Elbroch and Marks in *Bird Tracks and Signs*:

Long-eared Owl 1.1-2.5 cm W X 1.9-3.2 cm L

Barred Owl 1.6-1.9 cm W X 2.7-5.1 cm L

Great Horned Owl 1.4 -3.8 W cm X 1.6-11.4 cm L

Eckert in *The Owls of North America* states that Long-eared Owl pellets average $\frac{3}{4}$ " (1.9 cm.) in width and 1.5-2" (3.8-5.1 cm) in length.

Width measurements for Long-eared Owl agree but there is considerable variation in length measurements in the literature. Width is the critical measurement since it is determined by the diameter of internal organs. The width measurement for Pellet #4 would eliminate Barred Owl since Pellet #4 is too wide for the species.

All pellet widths are in range for Long-eared Owl but one pellet is long for the species according to Elbroch and Marks but in range for Eckert. However, width is the critical dimension.

Multiple tree use would also favor roosting Long-eared Owls since they are colonial roosters. Mature pine woods habitat surrounded by deciduous forest with nearby fields and power line cut for hunting is ideal habitat for Long-eared Owls.

Pellets and white wash were found under several trees on 3/22 and fresh bright white, recent white wash on more than a few days old was found two trees on 3/24 indicating an owl roost. Owls have been roosting in these pines recently and Long-eared Owl is the best fit for the evidence.



3177, Pellet #1 left, fragment right



Above: 3178, Pellet #1, left, fragment right

Below: 3183, Pellet#2





3188, Pellet #2



3189, pellet covered with white wash



3193, Pellet #4



3201, Pellets #5 & #6



3197, Pellet #6 with mouse jaw bone.

Baldpate Mountain: Mapping Number of Breeding Territories

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016
Yellow-billed Cuckoo	2	1	1		1	0		1	1
Chimney Swift								1	2
Eastern Wood-Pewee	32	16	27	33	28	18	18	13	16
Eastern Phoebe	2	1	1	1	2	1	1	1	1
Great-crested Flycatcher	2	3	1	1	2	0	1	0	3
Red-eyed Vireo	14	10	18	21	17	27	24	12	16
White-eyed Vireo	3	2	1	10	5	2	5	4	6
Yellow-throated Vireo	1	4	6	2	7	5	4	7	14
House Wren	1	1	1		2	3	1	4	2
Blue-gray Gnatcatcher		2		1	2	0	3	2	2
Wood Thrush	34	34	58	58	60	54	68	67	67
Veery	57	41	57	68	54	44	60	42	47
Gray Catbird	32	23	45	53	53	46	61	37	58
Blue-winged Warbler	7	3	8	12	8	11	5	14	10
Yellow Warbler	4	3	5	8	8	8	5	3	8
Chestnut-sided Warbler	10	8	7	14	10	7	10	11	10
Prairie Warbler	3	2	2	1	0	3	2	2	3
Pine Warbler	1	1	1	1	1	1	1	1	1
Worm-eating Warbler	4	5	11	7	7	8	5	7	6
Black-and-white Warbler	5	6	9	14	16	14	17	27	13
American Redstart	2	2	4	5	5	6	8	10	7
Ovenbird	107	116	130	133	115	129	132	130	168
Louisiana Waterthrush					1	1	1	1	1
Kentucky Warbler	4	7	10	10	3	3	2	1	3
Common Yellowthroat	58	30	40	70	51	51	50	68	68
Hooded warbler	32	29	38	30	29	19	30	21	26
Yellow-breasted Chat		1						0	0
Summer Tanager					1	1	1	1	1
Scarlet Tanager	15	15	24	29	26	25	32	17	27
Rose-breasted Grosbeak		5	4	4	7	8	11	12	8
Indigo Bunting	10	9	17	16	21	14	6	9	12
Eastern Towhee	52	24	37	46	40	41	46	38	49
Baltimore Oriole	7	8	13	13	10	11	12	9	19

Sourland Mountain Interior Forest Breeding Birds of Conservation Concern: Status

Species	Watchlist Status	ABC Status	NJ Status
Red-shouldered Hawk		green	E BR
Red-headed Woodpecker	yellow	orange	T
Acadian Flycatcher		yellow	RP
Eastern Wood- Peewee		yellow	RP
Yellow-throated Vireo		yellow	RP
Wood Thrush	yellow	orange	RP
Veery		yellow	SC
Kentucky Warbler	yellow	orange	SC
Ovenbird		yellow	D
Worm-eating Warbler		yellow	RP
Louisiana Waterthrush		yellow	RP
Black-and-white Warbler		yellow	RP
Hooded Warbler		yellow	RP
American Redstart		yellow	INC
Scarlet Tanager		yellow	RP

Sourland Mountain Interior Forest Breeding Birds of Conservation Concern

Species	EBird Status	BFL Study	SER Breeding Studies
Red-shouldered Hawk	yes	no response	confirmed
Red-headed Woodpecker	yes	one week only	
Acadian Flycatcher	yes	second week only	
Eastern Wood- Peewee	yes	confirmed	confirmed
Yellow-throated Vireo	yes	confirmed	confirmed
Wood Thrush	yes	confirmed	confirmed
Veery	yes	confirmed	confirmed
Kentucky Warbler	yes	confirmed	confirmed
Ovenbird	yes	NA	confirmed
Worm-eating Warbler	yes	confirmed	confirmed
Louisiana Waterthrush	yes	confirmed	confirmed

Black-and-white Warbler	yes	NA	confirmed
Hooded Warbler	yes	confirmed	confirmed
American Redstart	yes	NA	confirmed
Scarlet Tanager	yes	NA	confirmed

Sourland Ecosystem Reserve: Number of Breeding Territories

Sourland Ecosystem Reserve: Number of Breeding Territories

Species	2008	2009	2010	2011	2012	2013	2014	2015
Red-shouldered Hawk	1	0	0	0	0	0	0	0
Yellow-billed Cuckoo	0	1	0	0	0	0	0	1
Eastern Wood-Pewee	11	11	8	8	12	7	16	8
Great Crested Flycatcher	1	3	2	2	1	2	2	2
Red-eyed Vireo	5	5	4	10	11	11	14	7
Yellow-throated Vireo	0	1	0	0	3	1	4	3
Blue-gray Gnatcatcher	1	0	1	1	0	0	1	0
Wood Thrush	24	28	25	36	32	29	46	41
Veery	33	38	32	40	27	28	34	35
Gray Catbird	6	7	11	12	9	8	7	8
Blue-winged Warbler	2	2	2	4	1	0	1	1
Yellow Warbler	0	1	0	0	0	0	0	0
Chestnut-sided Warbler	0	1	0	1	0	0	0	0
Worm-eating Warbler	2	1	2	1	1	2	0	1
Black-and-white Warbler	1	1	2	2	2	5	1	2
American Redstart	0	0	0	0	1	1	0	0
Ovenbird	63	78	77	91	61	72	94	90
Louisiana Waterthrush	1	1	2	1	1	1	2	0
Kentucky Warbler	2	1	1	1	1	2	1	1
Hooded Warbler	7	11	3	5	5	5	4	1
Scarlet Tanager	14	4	9	15	11	13	13	8
Rose-breasted Grosbeak	4	0	1	1	0	2	1	2
Indigo Bunting	0	0	1	0	2	2	1	1
Eastern Towhee	14	4	12	10	13	6	16	4
Baltimore Oriole	1	1	2	3	2	1	1	0
Common Yellowthroat	5	7	6	9	4	8	7	7

Breeding territories determined by males singing on territory three or more times.

Note: Worm-eating Warbler and Arcadian Flycatcher heard twice singing on territory in 2014.

Second Hooded Warbler and Kentucky Warbler singing twice on territory in 2015.

Sourland Mountain Birds of Conservation Concern: Status

Species	Watchlist Status	ABC Status	NJ Status
Red-shouldered Hawk		green	E BR
Chimney Swift		yellow	RP
Red-headed Woodpecker	yellow	orange	T
Eastern-wood Peewee		yellow	RP
Acadian Flycatcher		yellow	RP
Olive-sided Flycatcher	yellow	orange	U
Yellow-billed Cuckoo		yellow	RP
Black-billed Cuckoo		orange	RP
N. Rough-winged Swallow		yellow	S
Wood Thrush	yellow	orange	RP
Veery		yellow	SC
Gray-cheeked Thrush		yellow	SC
Swainson's Thrush		yellow	S
Bicknell's Thrush	red	red	
Yellow-throated Vireo		yellow	RP
Blue-headed Vireo		yellow	SC
Philadelphia Vireo		yellow	S
Warbling Vireo		yellow	S
Blue-winged Warbler	yellow	orange	RP
Bay-breasted Warbler	yellow	yellow	S
Prairie Warbler	yellow	orange	RP
Prothonotary Warbler	yellow	orange	RP
Kentucky Warbler	yellow	orange	SC
Canada Warbler	yellow	orange	SC
Ovenbird		yellow	D
Worm-eating Warbler		yellow	RP
Louisiana Waterthrush		yellow	RP
Northern Waterthrush		yellow	S
Black-and-white Warbler		yellow	RP
Tennessee Warbler		yellow	D
Nashville Warbler		yellow	S
Connecticut Warbler		orange	D

Mourning Warbler	yellow	INC
Common Yellowthroat	yellow	D
Hooded Warbler	yellow	RP
American Redstart	yellow	INC
Cape May Warbler	yellow	S
Northern Parula	yellow	SC
Blackburnian Warbler	yellow	RP
Chestnut-sided Warbler	yellow	S
Blackpoll Warbler	yellow	D
Black-throated blue Warbler	yellow	RP
Yellow-throated Warbler	yellow	RP
Black-throated Green Warbler	yellow	
Wilson's Warbler	yellow	S
Eastern Towhee	yellow	RP
Scarlet Tanager	yellow	RP
Rose-breasted Grosbeak	yellow	RP
Indigo Bunting	yellow	RP
Baltimore Oriole	yellow	RP

Sourland Mountain Birds of Conservation Concern

Species	eBird Reported	BFL Study	SER Breeding Study
Red-shouldered Hawk	resident	no response	confirmed
Chimney Swift	breeding, migrant	NA	confirmed
Red-headed Woodpecker	resident	one week only	no
Eastern-wood Peewee	breeding, migrant	confirmed	confirmed
Acadian Flycatcher	breeding, migrant	second week only	
Olive-sided Flycatcher	migrant	NA	no
Yellow-billed Cuckoo	breeding, migrant	NA	confirmed
Black-billed Cuckoo	breeding, migrant	NA	
N. Rough-winged Swallow	breeding, migrant	NA	
Wood Thrush	breeding, migrant	confirmed	confirmed
Veery	breeding, migrant	confirmed	confirmed
Gray-cheeked Thrush	migrant	NA	
Swainson's Thrush	migrant	NA	
Bicknell's Thrush	migrant	NA	no
Yellow-throated Vireo	breeding, migrant	confirmed	confirmed
Blue-headed Vireo	migrant	NA	

Philadelphia Vireo	migrant	NA	
Warbling Vireo	breeding, migrant	NA	
Blue-winged Warbler	breeding, migrant	NA	confirmed
Bay-breasted Warbler	migrant	NA	
Prairie Warbler	breeding,migrant	NA	
Prothonotary Warbler	migrant	no response	
Kentucky Warbler	breeding	confirmed	confirmed
Canada Warbler	migrant	no response	
Ovenbird	breeding,migrant	NA	confirmed
Worm-eating Warbler	breeding,migrant	confirmed	confirmed
Louisiana Waterthrush	breeding,migrant	confirmed	confirmed
Northern Waterthrush	migrant	NA	
Black-and-white Warbler	breeding,migrant	NA	confirmed
Tennessee Warbler	migrant	NA	
Nashville Warbler	migrant	NA	
Connecticut Warbler	migrant	NA	
Mourning Warbler	migrant	NA	
Common Yellowthroat	breeding,migrant	NA	
Hooded Warbler	breeding	confirmed	confirmed
American Redstart	breeding	NA	
Cape May Warbler	migrant	NA	
Northern Parula	migrant	no response	
Blackburnian Warbler	migrant	NA	
Chestnut-sided Warbler	breeding, migrant	NA	
Blackpoll Warbler	migrant	NA	
Black-throated blue Warbler	migrant	NA	
Yellow-throated Warbler	migrant	NA	
Black-throated Green Warbler	migrant	NA	
Wilson's Warbler	migrant	NA	
Eastern Towhee	breeding,migrant	NA	confirmed
Scarlet Tanager	breeding,migrant	NA	confirmed
Rose-breasted Grosbeak	breeding,migrant	NA	confirmed
Indigo Bunting	breeding, migrant	NA	confirmed
Baltimore Oriole	breeding,migrant	NA	confirmed

NJ T&E Species in bold print.

Baldpate Mountain and Sourland Mountain Table Keys and Notes

Breeding Birds of Conservation Concern and Birds of Conservation Concern Tables

The majority of species in the breeding bird tables are Neotropical migrants. The Pine Warbler barely extends its winter range into the Neotropics with most of the population wintering in the southern United States.

Watchlist Status: National Audubon 2007 Watchlist Species. Ratings are national. National Audubon and American Bird Conservancy websites.

ABC Status: American Bird Conservancy (ABC) Conservation Ranking for All U.S. Birds. 2012. ABC website. Birds are scored for population size, range size, threats, and population trends. Yellow: potential concern. Orange: Vulnerable. Red: At-Risk. Green: Secure. Rankings are national.

NJ Status:

NJ T&E: New Jersey threatened and endangered species are listed in bold print. Conserve Wildlife website. Last updated April 2, 2012.

E Endangered

E BR Endangered breeding

T Threatened

T BR Threatened breeding

NJDEP Division of Fish and Wildlife Birds of New Jersey: NJDEP website. Last updated December 10, 2004.

E Endangered

T threatened

SC Special Concern

D Decreasing

INC Increasing

RP Regional Priority

S Stable

U Undetermined

The 2012 T&E list ratings are used where there is a discrepancy with the 2004 NJDEP list.

eBird: Cornell Laboratory of Ornithology (CLO) eBird Data base. Access is through the eBird website. Bar graphs were generated on *Explore Data* page. Clicking on “map” to right of a species name generates a map with sighting locations for that species. Clicking on any location generates eBird records for that species at that location. The species maps generated on the Baldpate Mountain Bar Graph support our statement that the areas adjacent to Baldpate do not support either the number of species or the number of birds of species of conservation concern that Baldpate Mountain supports.

BFL: Birds in the Forested Landscape, Cornell Laboratory of Ornithology citizen science protocol. Four study sites are located at Baldpate Mountain and two sites are located in the Sourland Ecosystem Reserve (SER). The protocol was repeated twice per breeding season at Baldpate Sites 1 & 2 in 2004 & 2005; Baldpate Sites 1-3 in 2006-2008; Baldpate Sites 1-4 from 2009 through 2014 and SER Sites 2007-2014. Reference: Cornell Laboratory of Ornithology (CLO) Website. The CLO stopped collecting data in 2012 because of funding problems but WCAS was requested to continue gathering data for Mercer County.

Confirmed: Species detected both sessions 2-3 weeks apart in at least one year.

First week only: Species detected in first session only in at least one year.

Sec. week only: Species detected in second session in at least one year.

One week only: Species detected in either first or second week in multiple years.

No response: Species did not respond.

NA: Species not included in study.

Baldpate and Sourland Ecosystem Reserve Breeding Studies: Mapping singing males to determine breeding territories.

Confirmed: male singing on territory at least three times during survey period; adult pair observed courting or mating; occupied nest or recently fledged young seen in territory or adults carrying food in territory.

2008-2016 Baldpate:

Survey: Each route was surveyed a minimum of six times between May and early July. In addition, Pine Warbler and Louisiana Waterthrush (2012-2014) breeding sites were surveyed in April since these species start and finish the breeding cycle early. Data from Baldpate and Fiddler's Creek routes were combined. Baldpate was surveyed in two routes because it was not possible to cover the four high quality habitats in one morning.

Breeding territories were determined by a male singing on territory at least three times.

2008-2014 Baldpate Ridge Trail Loop Route:

Straight trail from Pleasant Valley parking lot to connector trail to North-east paths.

Ridge Trail (White Trail) from Pleasant Valley Road parking lot to old logging trail /horse trail going from tenant farm to power line & return by Northwest Trail (new white trail 2008); Red Trail (North-west loop); return on Ridge Trail (White Trail) from pine windrow to parking lot.

Approximately 6 miles loop including three high quality spicebush thicket areas.

2008-2014 Fiddler's Creek Baldpate Route: Summit Trail from Fiddler's Creek parking lot; loop around summit; return by road.

Approximately 2.3 miles loop including high quality spicebush thicket adjacent to trail and road.

2008-2015 Sourland Ecosystem Reserve:

Survey: Each route was surveyed a minimum of six times between May and early July. In addition, Louisiana Waterthrush breeding sites were surveyed in April since these species start and finish the breeding cycle early.

Breeding territories were determined by a male singing on territory at least three times with the exception of the Red-shouldered Hawk. The courting Red-shouldered Hawks were observed on April 23, 2008 and an immature Red-shouldered Hawk was observed in the reserve on July 9, 2008.

Routes: Yellow trail from Mountain Road parking lot to Blue Trail entrance after large old field; Blue Trail returning to Yellow Trail; Yellow Trail to Orange Trail; Orange Trail to Green Trail crossing hand rail at small creek; following Green Trail over hill and to spicebush thicket at base of hill; return to Orange Trail to Yellow Trail to parking lot. Parts of two side trails are included to cover two potential Louisiana Waterthrush sites: side trail from Blue Trail ending at creek and part of logging road intersecting Yellow Trail after larger old field.

Route described going counterclockwise but alternated direction when surveying.

Approximately 3.5 mile loop including three high quality spicebush thickets.

Breeding Bird Survey Species: The primary study species are the Nearctic-Neotropical migrant species that breed in the greater Sourland Mountain ecosystem. Warbler species that winter in the Southern states and the Eastern Towhee are included. Year round residents are not included since they are undercounted in the May thorough early July timeframe. Surveying woodpeckers by this method is compromised because males don't sing but both sexes call.

Documentation for Statements Made in Letter

Interior forest breeding birds habitat requirements and conservation concerns:

See individual species accounts in Poole, A. & Gill, F., eds., *The Birds of North America*. The Birds of North America, Inc. Philadelphia, PA. Online edition, accessible on Cornell Laboratory of Ornithology website, requires a subscription.

See individual species accounts in del Hoyo, J., Elliot, A., Sargatal, J & Christie, D. A. eds. (1992-2013) *Handbook of the Birds of the World*. 17 volumes. Lynx Edicions, Barcelona. Online at <http://www.hbw.com>. Online access requires subscription.

Both *The Birds of North America* and *Handbook of Birds of the World* (HBW) have extensive references supporting their facts and conclusions. HBW also has germane essays on bird biology and conservation.

Birds in the Forested Landscape: www.birds.cornell.edu/bfl. See individual species accounts for habitat requirements.

Jeffrey V. Wells, *Birder's Conservation Handbook*, Princeton University Press. 2007.

Douglas H. Morse, *American Warblers*. Harvard University Press. 1989.

Askins, R. A., "Deep-forest Birds and Hostile Edges" in *Restoring North America's Birds*. Yale University Press 2000.

Bird Conservation Status:

America Bird Conservancy *Birds of Conservation Concern*:

<http://www.abcbirds.org/abcprograms/science/conservationchecklist/index.html> . October 2012.

Audubon Watchlist:

http://birds.audubon.org/sites/default/files/documents/watchlist_2007_technicalreport.pdf.

New Jersey Threatened and Endangered Species: <http://www.njfishandwildlife.com/tandespp.htm>

Last updated 4/2/12.

New Jersey bird conservation ratings: <http://www.nj.gov/dep/fgw/chkbirds.htm> Last updated 12/10/04.

New Jersey Important Bird Areas:

<http://www.njaudubon.org/SectionConservation/IBBAProgram/ImportantBirdAreasofNewJersey.asp>

Brown-headed Cowbird Parasitism:

There is extensive scholarly literature on Brown-headed Cowbird parasitism. The consensus is that Brown-headed Cowbird parasitism is a major factor influencing the decline of many interior woodland nesting species. See the following:

A 1983 review article: <http://bioscience.oxfordjournals.org/content/33/1/31.full.pdf+html>

Martin and Finch, eds. *Ecology and Management of Neotropical Migratory Birds*, Oxford University Press, 1995. Chapter 15 "Ecology and Behavior of Cowbirds and Their Impact on Host Populations".

John M. Hagan III and David W. Johnson, editors, *Ecology and Conservation of Neotropical Migrant Landbirds*, Smithsonian Institution Press. 1992. Robinson, "Population dynamics of breeding Neotropical migrants in a fragmented Illinois landscape".

Google search results show extensive references:

http://scholar.google.com/scholar?q=brown-headed+cowbirds+parasitism&hl=en&as_sdt=0&as_vis=1&oi=scholart&sa=X&ei=rFjVL3Ylu_CsASJ2YGQBA&ved=0CB0QgQMwAA

There is also extensive literature that shows breeding declines of Neotropical migrants correlate with forest fragmentation:

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=7440300&fileId=S0959270900002793>

<http://www.state.nj.us/dep/fgw/neomigr.htm>

John M. Hagan III and David W. Johnson, editors, *Ecology and Conservation of Neotropical Migrant Landbirds*, Smithsonian Institution Press. 1992. See articles by Freemark and Collins, "Landscape ecology of birds breeding in temperate forest fragments".

Douglas Morse, *American Warblers*, Harvard University Press. 1989. Pp. 279-284 "Forest Fragmentation".

Martin and Finch, eds. *Ecology and Management of Neotropical Migratory Birds*, Oxford University Press, 1995. See p. 86 paragraph #1 for general statement. See Chapter 13, "Habitat Fragmentation in the Temperate Zone".

Google search results show extensive references:

http://scholar.google.com/scholar?q=effects+of+forest+fragmentation+on+Neotropical+migrants&hl=en&as_sdt=0&as_vis=1&oi=scholar&sa=X&ei=L5jVK2pHvjfsATJxoL4Bw&ved=0CB0QgQMwAA

eBird Records

The URL addresses are for eBird Records in bar graph format. Clicking "map" to the right of the species name accesses records for individual species. The species maps support our statement that the areas adjacent to Baldpate do not support either the number of species or the number of birds of species of conservation concern that Baldpate Mountain supports and support our statement that the Sourlands are important for breeding and migrating Neotropical migrants.

Sourland Ecosystem Reserve Interior Forest Reserves eBird bar graph:

<http://ebird.org/ebird/GuideMe?step=saveChoices&getLocations=hotspots&parentState=US-NJ&bMonth=01&bYear=1900&eMonth=12&eYear=2015&reportType=location&hotspots=L284579&hotspots=L2189584&hotspots=L2189580&hotspots=L303201&continue.x=30&continue.y=11>

Sourland Mountain Regional Macrosite eBird Bar Graph:

http://ebird.org/ebird/GuideMe?step=saveChoices&getLocations=ibas&parentState=US-NJ&bMonth=01&bYear=1900&eMonth=12&eYear=2015&reportType=location&ibas=US-NJ_3178&continue.x=48&continue.y=10

Baldpate Mountain eBird Bar Graph:

<http://ebird.org/ebird/GuideMe?step=saveChoices&getLocations=hotspots&parentState=US-NJ&bMonth=01&bYear=1900&eMonth=12&eYear=2015&reportType=location&hotspots=L200757&continue.x=32&continue.y=16>

Hunterdon and Mercer Counties Grassland Species of Conservation Concern

In Hunterdon and Mercer counties, the proposed pipeline route bisects farmlands which may have grasslands suitable for nesting grassland species, all of which are declining in New Jersey.

eBird records for Mercer and Hunterdon counties:

<http://ebird.org/ebird/GuideMe?step=saveChoices&getLocations=counties&parentState=US-NJ&bMonth=01&bYear=1900&eMonth=12&eYear=2014&reportType=location&counties=US-NJ-019&counties=US-NJ-021&continue.x=37&continue.y=12>

Summary T&E Records from eBird for Grassland Birds: These are records from the affected townships, not necessarily from the pipeline properties. These are the species that have been reported to eBird from similar habitats in Holland, Alexandria, Kingwood, Delaware, West Amwell and Hopewell Townships and may be on the properties affected by the pipeline. From the eBird data, American Kestrel, Bobolink, and Grasshopper Sparrow are the most likely breeding birds of conservation concern that could be breeding on the properties affected by the pipeline.

Bald Eagle: NJ Endangered breeding & Threatened non-breeding; Breeding season records April, May, June.

American Kestrel: NJ Threatened; Breeding season records April, May, June.

Peregrine Falcon: Endangered breeding; Breeding season records in May, June.

Bobolink: Threatened breeding; Breeding season records June, July.

Osprey: Threatened breeding; Breeding season records April, May, June.

Grasshopper Sparrow: Threatened breeding; Breeding season records late May, June, July.

Savannah Sparrow: Threatened breeding; Breeding season records late May, June, July.

Note that raptors generally breed earlier than passerines.

References on Grassland Birds:

R. A. Askins, "Grassland Birds of the East Coast" in *Restoring North America's Birds*. Yale University Press 2000.

See individual species accounts in A. Poole & F. Gill, eds., *The Birds of North America*. The Birds of North America, Inc. Philadelphia, PA. Online edition, accessible on Cornell Laboratory of Ornithology website, requires a subscription.

Notes on Research and References

“Documentation for Statements Made in Letter” includes a list of references for the statements made in our letter concerning habitat requirements, species distribution, forest fragmentation and Brown-headed Cowbird parasitism.

Summaries of the citizen science documentation of the presence of breeding and migrating species of conservation concern found in the Sourland Mountain interior forest reserves and at Baldpate Mountain are included to support our assertion that the Sourland Mountain and Baldpate Mountain are important for these species. URL links to the Cornell Laboratory of Ornithology’s eBird data base for the Greater Sourland Mountain Ecoregion, Sourland Mountain interior forest reserves, including the Sourland Ecosystem Reserve, and Baldpate Mountain are included. Note the Sourland Mountain Ecoregion includes areas outside of the core continuous forest as well as the core forest area. To collaborate the eBird data, the results of two intensive, more localized bird breeding studies in the core forest of the Sourland Mountain and at Baldpate Mountain are included. The tables include the results of a study mapping male birds singing on territory in the Sourland Ecosystem Reserve and at Baldpate Mountain from 2008 to 2014. The tables also include a summary of the results of the Cornell Laboratory of Ornithology’s *Birds in the Forested Landscape* (BFL) protocol at two sites in the Sourland Mountain Ecosystem Reserve and at four sites at Baldpate Mountain. While the six areas covered in this survey are small, the rigorous protocol collaborates the results of the singing male census.

An URL address for eBird records for Hunterdon and Mercer Counties is included with a summary of the grassland birds of conservation concern found in the affected Townships. Some of the properties affected by the pipeline have similar habitat to the properties where the birds of conservation concern were located. A survey of the properties affected by the pipeline might find these species on the affected properties. From the eBird data for the adjacent area, the NJ Threatened American Kestrel and the NJ Threatened Breeding Bobolink and Grasshopper sparrow are the species most likely to be found. A thorough search of these properties should be included in an Environmental Impact Study.

Washington Crossing Audubon Society (WCAS) is a chapter of National Audubon. WCAS conducts active Citizen Science studies in the Sourland Mountain region, conducts biosurveys for local NGO’s and local governments in the Sourland Mountain and the Hopewell Valley, and supports Hannah Suthers’ Featherbed Lane bird banding station and Tyler Christensen’s saw-whet owl banding project. WCAS also helps to support Tyler Christensen’s and Sean Graesser’s bird banding stations in Costa Rica. Hannah and Tyler are board members and members of the science committee. WCAS board members are conducting active research in the Sourland Mountain region as Citizen Scientists.

This document was compiled by C. Sharyn Magee, President of Washington Crossing Audubon Society and chair of the Science Committee.

Qualifications:

B.S. Chemistry, Westhampton College, University of Richmond 1969

M.S. Chemistry, University of Virginia 1973

Research Assistant, Department of Geology and Geophysics, Princeton University, 1986-1987.

Evans East, EAG Laboratories, 1989-2006. Senior Scientist at retirement.

Citizen Scientist activities:

Volunteer Featherbed Lane Banding Station 2001-2014, sub-permittee under Hannah Suthers, master bander.

Birds in the Forested Landscape Project, Cornell Laboratory of Ornithology, 2004-2014.

Mapping singing males at Baldpate Mountain 2006-2014 and the Sourland Ecosystem Reserve 2008-2014.

Contributor to eBird from 2000. eBird liaison for WCAS.

Co-leader St. Michael's Farm Preserve biosurvey with ornithologist Hannah Suthers from 2010.

Co-author of habitat study for nesting Hooded and Kentucky Warblers at Baldpate Mountain and in the SER: http://www.fohvos.org/pdfs/forest_structure_and_breeding_birds.pdf