

FIELD ID: 1

MINE: Bailey

SITE: A-1-2a

COORDINATES : N 239928, E 1205213

STAND STOCKING: Young, fully stocked thicket of mainly black locust trees and saplings in an old-field succession setting

CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner) with a few associated ash (ozone injury), black cherry (light decay, fall webworm infestations), elm (light leaf galls and fungal leafspots; severe skeletonizing by elm leaf beetle), hickory, and sugar maple trees; grapevines in canopy

SUBCANOPY TREE SPECIES : Mainly young black locust with a few associated boxelder and thornapple (fungal scab infections)

GROUND COVER SPECIES : Asters, blackberry, grapevines (ozone injury), hydrangea, poison ivy, multiflora rose, raspberry, spicebush, tree seedlings (scarce) and Virginia creeper.

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay were observed in trunks of most black locust trees. Many of the locust trees in the stand were dead or dying from decay. Elms in the immediate area had severe skeletonizing and defoliation from the elm leaf beetle, and other elms were dead from what appeared to be (fungal) Dutch elm disease. Black cherry trees had severe defoliation from fall webworm insect infestations.

FIELD ID: 2

MINE: Bailey

SITE: A-1-2b

COORDINATES : N 240060, E 1205155

STAND STOCKING: Young, fully stocked thicket of mainly black locust trees

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) and elm (fungal leafspots, severe skeletonizing by elm leaf beetle) with a few associated black cherry (fall webworm infestations)

SUBCANOPY TREE SPECIES : Mainly young black locust and elm

GROUND COVER SPECIES : Asters, blackberry, grapevines (ozone injury), hydrangea, poison ivy, multiflora rose, raspberry, spicebush, tree seedlings (scarce) and Virginia creeper.

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees. Many of the locust trees in the stand were dead or dying from decay. Elms in the immediate area had severe skeletonizing and defoliation from the elm leaf beetle. Some elms in the general area were dead from what appeared to be (fungal) Dutch elm disease. Black cherry trees had severe defoliation from fall webworm insect infestations.

FIELD ID: 3
MINE: Bailey
SITE: A-1-1a
COORDINATES : N 241014, E 1205060
STAND STOCKING: Fully stocked stand of mainly older black locust trees
CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated elm (fungal leafspots, severe skeletonizing by elm leaf beetle) and black cherry (fall webworm infestations)
SUBCANOPY TREE SPECIES : Mainly young black locust and elm, with a few scattered boxelders
GROUND COVER SPECIES : Mainly blackberry and spicebush

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees. Many of the locust trees in the stand were dead or dying from decay. Elms in the immediate area had severe skeletonizing and defoliation from the elm leaf beetle. Black cherry trees in the general area had severe defoliation from fall webworm insect infestations.

FIELD ID: 4
MINE: Bailey
SITE: A-1-1b
COORDINATES : N 241200, E 1205000
STAND STOCKING: Moderately stocked stand of mainly older black locust trees
CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated elm (fungal leafspots, severe skeletonizing by elm leaf beetle), northern red oak, red maple and black cherry (fall webworm infestations)
SUBCANOPY TREE SPECIES : Mainly young trees of canopy species
GROUND COVER SPECIES : Mainly blackberry and spicebush.

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees. Many of the locust trees in the stand were dead or dying from decay. Elms in the immediate area had severe skeletonizing and defoliation from the elm leaf beetle. Black cherry trees in the general area had severe defoliation from fall webworm insect infestations.

FIELD ID: 5
MINE: Bailey
SITE: A-1-5
COORDINATES : N 241589, E 1203785
STAND STOCKING: Very understocked canopy gap (opening) containing mainly elm; associated black locust with grapevines in the tops
CANOPY TREE SPECIES : Mainly elm (severe skeletonizing by elm leaf beetle), with a few associated black locust (severe leaf miner)
SUBCANOPY TREE SPECIES : Mainly tree-of-heaven, elm and black locust
GROUND COVER SPECIES : The opening was dominated by grapevines and poison ivy along with blackberry, multiflora rose and Virginia creeper

OBSERVATIONS/COMMENTS: This was a large gap in the canopy mainly caused mainly by localized dying of elm trees (likely due to Dutch elm disease) and some dead black locust trees with severe decay. The forest floor of the gap had been colonized with various vines and tree-of-heaven seedlings. It is likely that most of the upper canopy stress observed on the imagery was due to a combination of feeding injury on black locust trees by the adult locust leaf miner insect, black locust trees dead or dying from decay, and severe skeletonizing and defoliation of elms by the elm leaf beetle. The forest floor within the gap was so dense with vines and foliage that possible subsidence effects associated with longwall mining could not be observed.

FIELD ID: 6
MINE: Bailey
SITE: A-1-x1
COORDINATES : N 239793, E 1202744
STAND STOCKING: Fully stocked, closed-canopy stand dominated by maples
CANOPY TREE SPECIES : Mainly red and sugar maples with a few black locust and sycamores; many yellow poplars in the general stand
SUBCANOPY TREE SPECIES : Dominated by maple saplings
GROUND COVER SPECIES : Extremely sparse; very dense canopy

OBSERVATIONS/COMMENTS: There were no significant canopy stresses that were readily apparent from the ground at this location. The health of the observed trees was very good.

Later comment: This was intended to be field site A-1-7, but incorrect coordinates were entered into the GPS unit.

FIELD ID: 7

MINE: Bailey

SITE: A-1-3a

COORDINATES : N 241607, E 1208688

STAND STOCKING: Generally fully stocked, closed-canopy stand

CANOPY TREE SPECIES : Mainly oaks, maples and dying black locust with some elm

SUBCANOPY TREE SPECIES : Very sparse; mainly young trees of canopy species; some musclewood

GROUND COVER SPECIES : Extremely sparse due to closed canopy, but consisting mainly of spicebush, with some blackberry, blueberry, and Christmas ferns in openings; a few ash, black cherry, black oak, hickory, and red maple seedlings also colonizing the areas under large dead red oaks

OBSERVATIONS/COMMENTS: In general, this stand was comprised of excellent timber-size oaks and maples. However, there was considerable, but scattered, mortality of large individual red oaks. This disorder (“oak decline”) is often caused by a combination of insect defoliations and drought in past years. There were also scattered patches of dead and dying black locust trees. Living locust trees had significant canopy injury caused by the adult locust leaf miner insect, as well as severe fungal decay in the trunks. It is likely that most of the upper canopy stress observed in the imagery at this large site was due to the oak mortality and scattered black locust trees with locust leaf miner infestations.

FIELD ID: 8
MINE: Bailey
SITE: A-1-3b
COORDINATES : N 241725, E 1208480
STAND STOCKING: Fully stocked, closed-canopy stand
CANOPY TREE SPECIES : Mixed stand consisting mainly of red maple and red oak with occasional elm and sycamore
SUBCANOPY TREE SPECIES : Very sparse; mainly young trees of canopy species
GROUND COVER SPECIES : Very sparse due to closed canopy; mainly smartweed and Christmas ferns, with occasional multiflora rose, spicebush, violets, and Rubus; elm and maple seedlings also were colonizing the openings under the large dead red oaks

OBSERVATIONS/COMMENTS: In general, this large stand was comprised of excellent, timber-size oaks and red maples. However, there was considerable, but scattered, mortality of large individual red oaks. This disorder (“oak decline”) is often caused by a combination of insect defoliations and drought in past years. There were also scattered patches of dead and dying black locust trees outside of the plot, with significant canopy injury caused by the adult locust leaf miner insect, as well as severe fungal decay in the trunks. It is likely that most of the upper canopy stress observed in the imagery in June in both A-1-3a and A-1-3b was due to the oak mortality and scattered black locust trees with locust leaf miner infestations.

FIELD ID: 9

MINE: Bailey

SITE: A-1-3c

COORDINATES : N 241415, E 1208770

STAND STOCKING: Fully stocked, closed-canopy stand

CANOPY TREE SPECIES : Mixed stand mainly of black cherry, sugar maple, and red oak with some elm (elm leaf beetle skeletonizing)

SUBCANOPY TREE SPECIES : Very sparse; mainly young trees of canopy species

GROUND COVER SPECIES : Very sparse due to closed canopy; mainly scattered Christmas ferns and smartweed, with some multiflora rose, spic ebush, violets, and Rubus; elm and maple seedlings also were colonizing the openings under large dead red oaks

OBSERVATIONS/COMMENTS: This plot was located just outside the stressed canopy area determined from the imagery, and it was evaluated because of adjacent cracks in the ground due to mining subsidence and because it was an apparently healthy stand adjacent to a stressed canopy area. In general, the health of trees in this stand was similar to the health of trees at A-1-3a and A-1-3b. However, there were more black cherry trees at this location and fewer dead oaks.

FIELD ID: 10

MINE: Bailey

SITE: A-1-4

COORDINATES : N 242648, E 1207745

STAND STOCKING: An older stand, comprised mainly of black locust and elm, surrounding a large gap in the canopy

CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner) and elm (light leaf galls and fungal leafspots) with a few associated black cherry trees (fall webworm infestations)

SUBCANOPY TREE SPECIES : Mainly young black locust in the gap

GROUND COVER SPECIES : Mainly blackberry, grapevines, and multiflora rose along with ash, buckeye, hickory and maple tree seedlings in the opening

OBSERVATIONS/COMMENTS: Most of the upper canopy stress identified from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Many of the locust trees in the stand were dead or dying from decay.

FIELD ID: 11
MINE: Bailey
SITE: A-1-8
COORDINATES : N 241409, E 1207565
STAND STOCKING: Moderately well stocked stand of black locust and black cherry with occasional elm
CANOPY TREE SPECIES : Black locust (severe leaf miner) and black cherry (severe fall webworm infestations) with a few associated elm (severe skeletonizing by elm leaf beetle); the stand adjacent to the plot contained many ash, most of which had severe decay and conks on the trunks
SUBCANOPY TREE SPECIES : Mainly young trees of canopy species
GROUND COVER SPECIES : Thickets of greenbriar, multiflora rose and spicebush

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay occurred in trunks of most black locust trees. Elms exhibited severe skeletonizing and defoliation from the elm leaf beetle. Black cherry trees had severe defoliation from fall webworm insect infestations. Cracks in the soil from subsidence were common in the stand. One observed leaning tree was clearly the result of a subsidence crack.

FIELD ID: 12
MINE: Bailey
SITE: A-1-x2
COORDINATES : N 240150, E 1204150
STAND STOCKING: Fairly open, young stand; former pasture now containing early successional mixed hardwoods
CANOPY TREE SPECIES : Mainly black locust (leaf miner and mortality) and elm (severe skeletonizing by elm leaf beetle and mortality) with associated ash and sugar maple
SUBCANOPY TREE SPECIES : Mainly young trees of canopy species
GROUND COVER SPECIES : Multiflora rose, Rubus and spicebush, as well as ash seedlings

OBSERVATIONS/COMMENTS: This site was selected in order to examine the health of a nearby stand that was not observed to be stressed based upon the aerial imagery. This site did have some upper canopy stress due to locust leaf miner feeding injury on scattered black locust trees and on elms due to the elm leaf beetle. However, it is possible that these stressed species were masked during the collection of aerial imagery in June by the crowns of the healthy maples and ash in the stand.

FIELD ID: 13

MINE: Bailey

SITE: A-3-2

COORDINATES : N 247218, E 1199735

STAND STOCKING: A very poorly stocked (large opening) stand comprised of young dead and defoliated elm trees surrounded by a thicket of black locust trees and black locust saplings, located at the edge of a field

CANOPY TREE SPECIES : Mainly elm (skeletonizing by elm leaf beetle and mortality likely caused by Dutch elm disease), black locust (very severe leaf miner) with occasional black cherry and sugar maple trees

SUBCANOPY TREE SPECIES : Mainly young elm and black locust, with a few associated sumacs

GROUND COVER SPECIES : Mainly a multiflora rose thicket, with some poison ivy, spicebush and Rubus

OBSERVATIONS/COMMENTS: This appeared to be a group of elms that had been killed by Dutch elm disease. The opening, located at the edge of a field, was being invaded by black locust. Most of the upper canopy stress observed in the imagery appeared to be due to the feeding injury on black locust trees caused by the adult locust leaf miner insect. Skeletonizing and defoliation by the elm leaf beetle on surviving elms was also very severe.

FIELD ID: 14
MINE: Bailey
SITE: A-2-2a
COORDINATES : N 243117, E 1216977
STAND STOCKING: Young, fairly open thicket of black locust trees and saplings in an old-field succession setting
CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner) with a few associated elms (severe skeletonizing by elm leaf beetle)
SUBCANOPY TREE SPECIES : Mainly young black locust
GROUND COVER SPECIES : Grass, raspberry, various weeds, a woody shrub

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees.

FIELD ID: 15
MINE: Bailey
SITE: A-2-2b
COORDINATES : N 243656, E 1216968
STAND STOCKING: Young, fairly open thicket of black locust trees and saplings in an old-field succession setting
CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner) with a few associated black cherries (severe fall webworm)
SUBCANOPY TREE SPECIES : Mainly young black locust
GROUND COVER SPECIES : Blackberry, grass, raspberry, white garlic mustard, a woody shrub, and various weeds; ash, elm and hickory tree seedlings

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees.

FIELD ID: 16
MINE: Bailey
SITE: A-2-1
COORDINATES : N 241771, E 1216783
STAND STOCKING: Young, fairly dense thicket of black locust trees and saplings in an old-field succession setting
CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner) with a few associated elms (severe skeletonizing by elm leaf beetle) and tree-of-heaven
SUBCANOPY TREE SPECIES : Mainly young black locust
GROUND COVER SPECIES : Very dense layer of blackberry, multiflora rose, raspberry, white garlic mustard, woody shrub and various weeds

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Also severe insect borer injury and severe fungal decay was observed in trunks of most black locust trees.

FIELD ID: 17

MINE: Bailey

SITE: A-2-3

COORDINATES : N 244291, E 1214553

STAND STOCKING: Two separate stands in this forest: an older logged-over stand and a young stand in a former pasture with a fence running between the stands; both stands were comprised of a mixture of hardwoods, including many black locust

CANOPY TREE SPECIES : Mainly black locust (very severe leaf miner), black walnut (severe fall webworm infestations) and elm (100% defoliation due to elm leaf beetle) with a few associated black cherry (severe fall webworm infestations) and ash

SUBCANOPY TREE SPECIES : Mainly saplings of the canopy species

GROUND COVER SPECIES : Mainly blackberry, white garlic mustard and a woody shrub

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect. Many of the locust trees in the stand had fungal decay in the trunks. Also, there was very severe defoliation of the elms and black walnuts in the area.

FIELD ID: 18

MINE: Blacksville

SITE: B-2-6

COORDINATES : N152441, E 1276374

STAND STOCKING: Very young, fully stocked thicket of mainly black locust trees and saplings in an old-field succession setting

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated black cherry

SUBCANOPY TREE SPECIES : Mainly young black locust

GROUND COVER SPECIES : Mainly very dense multiflora rose with some associated blackberry and grapevines

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on these young black locust trees caused by the adult locust leaf miner insect.

FIELD ID : 19

MINE: Blacksville

SITE: B-2-2

COORDINATES : N 152652, E 1276876

STAND STOCKING: Very young, fully stocked thicket of mainly black locust trees and saplings in an old-field succession setting

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated black cherry (severe lacebug infestations) and black walnut

SUBCANOPY TREE SPECIES : Mainly young black locust

GROUND COVER SPECIES : Mainly very dense multiflora rose with some associated blackberry and grapevines

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on these young black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 20
MINE: Blacksville
SITE: B-2-1a
COORDINATES : N 153616, E 1277192
STAND STOCKING: Large opening in canopy containing mainly dead elms with some dead black locusts
CANOPY TREE SPECIES : A mixture of black cherry, black locust, elm, hackberry, black walnut, and others; grapevines in the tops; many old dead trees
SUBCANOPY TREE SPECIES : Mainly saplings of canopy species; gap is being colonized by black locust
GROUND COVER SPECIES : The opening was predominantly spicebush and grapevines, along with blackberry, multiflora rose and white mustard garlic

OBSERVATIONS/COMMENTS: The upper canopy stress observed in June at this location was likely due to a combination of factors, including the many dead elm trees in the canopy gap, dead black locust trees, and possibly locust leaf miner injury on the surviving black locust trees. However, the locusts comprised perhaps only 20% of the canopy. The stressed area on the imagery extended into the stand surrounding the opening, as described for B-2-1b.

FIELD ID: 21

MINE: Blacksville

SITE: B-2-1b

COORDINATES : N 153415, E 1277207

STAND STOCKING: Moderately stocked (many dead trees) stand adjacent to the large opening

CANOPY TREE SPECIES : Mainly black locust with associated elm and sugar maple

SUBCANOPY TREE SPECIES : Mainly saplings of canopy species; black locust

GROUND COVER SPECIES : The opening was predominantly spicebush and grapevines, along with blackberry, multiflora rose and white mustard garlic

OBSERVATIONS/COMMENTS: The upper canopy stress observed from the imagery was likely due to feeding injury on black locust trees by the adult locust leaf miner insect.

FIELD ID: 22

MINE: Blacksville

SITE: B-2-5

COORDINATES: N 153915, E 1278180

STAND STOCKING: Very open stand, surrounded by black locust sapling thicket (severe feeding by locust leaf miner insect) along an old logging road

CANOPY TREE SPECIES : Mixture of species including ash, back cherry, black locust, elm, thornapple and tree-of-heaven

SUBCANOPY TREE SPECIES : Mainly saplings of canopy species; black locust saplings

GROUND COVER SPECIES : Predominantly multiflora rose and blackberry, along with deer's tongue grass, grapevines, sumac and white mustard garlic

OBSERVATIONS/COMMENTS: The upper canopy stress observed from the imagery was likely due to feeding injury on black locust trees by the adult locust leaf miner insect.

FIELD ID: 23

MINE: Blacksville

SITE: B-2-8

COORDINATES : N 154077, E 1275378

STAND STOCKING: Very young, fully-stocked thicket of mainly black locust trees and saplings in an old-field succession setting

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner)

SUBCANOPY TREE SPECIES : Mainly young black locust; some sumac

GROUND COVER SPECIES : Goldenrod, grass, Rubus and a climbing vine

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was due to severe feeding injury on these young black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 24

MINE: Blacksville

SITE: B-1-1a

COORDINATES : N 156266, E 1261266

STAND STOCKING: Young, moderately stocked mixed hardwood stand dominated by black locust

CANOPY TREE SPECIES : Mainly black locust (very severe locust leaf miner injury) associated with black cherry, black walnut, and elm; grapevines in canopy

SUBCANOPY TREE SPECIES : Mainly small trees of the canopy species

GROUND COVER SPECIES : Dominated by asters and spicebush, along with multiflora rose and raspberry

OBSERVATIONS/COMMENTS: The upper canopy stress observed from the imagery was likely due to feeding injury on black locust trees by the adult locust leaf miner insect.

FIELD ID: 25

MINE: Blacksville

SITE: B-1-1b

COORDINATES : N 156622, E 1260788

STAND STOCKING: Young, moderately stocked mixed hardwood stand with significant numbers of black locust

CANOPY TREE SPECIES : Mainly black locust (very severe locust leaf miner injury) associated with ash (leafspot), black cherry (light fall webworm), black walnut (light fall webworm) and elm (skeletonizing by elm leaf beetle)

SUBCANOPY TREE SPECIES : Young trees of canopy species

GROUND COVER SPECIES : A thick cover dominated by asters along with multiflora rose and Rubus

OBSERVATIONS/COMMENTS: The upper canopy stress observed from the imagery was likely due to feeding injury on black locust trees by the adult locust leaf miner insect.

FIELD ID: 26

MINE: Blacksville

SITE: B-1-9

COORDINATES : N 158574, E 1258849

STAND STOCKING: Young, moderately stocked black locust stand

CANOPY TREE SPECIES : Mainly black locust (very severe locust leaf miner injury) associated with black cherry; grapevines in canopy

SUBCANOPY TREE SPECIES : Hawthorn, thornapple, black cherry and black locust

GROUND COVER SPECIES : Very sparse ground cover dominated by white mustard garlic along with blackberry, grapevines, multiflora rose and raspberry

OBSERVATIONS/COMMENTS: The upper canopy stress observed from the imagery was likely due to feeding injury on black locust trees by the adult locust leaf miner insect.

FIELD ID: 27

MINE: Blacksville

SITE: B-1-10

COORDINATES : N 159282, E 1259111

STAND STOCKING: Generally well stocked oak stand, but with considerable canopy gaps due to oak mortality

CANOPY TREE SPECIES : Mainly scarlet and white oaks, with some hickory and red maple

SUBCANOPY TREE SPECIES : Dogwood, hickory, oaks and red maple

GROUND COVER SPECIES : Very sparse ground cover in areas beneath closed canopy; openings being colonized by bracken fern, greenbriar and tree seedlings

OBSERVATIONS/COMMENTS: The canopy stress observed from the imagery at this location was likely due to the death of two very large, dominant scarlet oak trees.

FIELD ID: 28

MINE: Blacksville

SITE: B-3-6

COORDINATES : N 157844, E 1282796

STAND STOCKING: Mainly a young black locust stand with a canopy gap caused by locust mortality; on a former pasture

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated black cherry, hickory, honey locust and sugar maple

SUBCANOPY TREE SPECIES : Apple, black cherry and tree-of-heaven

GROUND COVER SPECIES : Predominantly spicebush and dewberry with some blackberry, ferns, grapevines, Virginia creeper and white mustard garlic

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to severe feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 29

MINE: Blacksville

SITE: B-3-1

COORDINATES : N 153310, E 1281288

STAND STOCKING: A very young stand with a high percentage of black locust

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated ash and black cherry; grapevines in the canopy

SUBCANOPY TREE SPECIES : Black cherry, black locust, boxelder and thornapple

GROUND COVER SPECIES : Predominantly white mustard garlic and Rubus with some grapevines, spicebush and sunflower

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was the result of severe feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 30

MINE: Blacksville

SITE: B-3-2

COORDINATES : N 154465, E 1281865

STAND STOCKING: This site contains two stands; one was a very young stand with a high percentage of black locust on an old pasture; the second stand was more mature and contains mainly sugar maple with some old dying black locust. One plot that encompassed both stands was evaluated

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated ash and black cherry; grapevines in the canopy

SUBCANOPY TREE SPECIES : Black cherry and maple

GROUND COVER SPECIES : Very sparse within older stand with closed canopy; predominantly white mustard garlic and tree seedlings in the more open stand

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery in both stands was due to feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 31
MINE: Blacksville
SITE: B-3-3
COORDINATES : N 155258, E 1282003
STAND STOCKING: Middle-aged, moderately stocked mixed hardwood stand dominated by black locust
CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated ash, black cherry and black walnut
SUBCANOPY TREE SPECIES : Black cherry, black locust and tree-of-heaven
GROUND COVER SPECIES : Predominantly white mustard garlic with associated Rubus and tree seedlings

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 32

MINE: Humphrey No. 7

SITE: D-1-1

COORDINATES: N 175786, E 1305509

STAND STOCKING: Very open stand of young, small trees dominated by black locust

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) and sassafras with a few black walnut and elm; grape, poison ivy and Virginia creeper vines in canopy

SUBCANOPY TREE SPECIES : Black locust, black walnut, elm, thornapple and sassafras

GROUND COVER SPECIES : Predominantly white mustard garlic with some Rubus and spicebush

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 33

MINE: Humphrey No. 7

SITE: D-1-2

COORDINATES : N 173896, E 1307715

STAND STOCKING: Very open stand of young, small trees dominated by black locust

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with associated ash, black cherry and black walnut

SUBCANOPY TREE SPECIES : Black locust

GROUND COVER SPECIES : Predominantly white mustard garlic and blackberry with some deer's tongue grass, multiflora rose, raspberry and vines

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed from the imagery was due to feeding injury on black locust trees caused by the adult locust leaf miner insect.

FIELD ID: 34

MINE: Humphrey No. 7

SITE: Lee Property

COORDINATES : N 173790, E 1310680

STAND STOCKING: Very open stand of young ash and thornapples;
basically a field that is in the early stages of reverting to
woodland

CANOPY TREE SPECIES : Mainly ash with associated black cherry and yellow-
poplar

SUBCANOPY TREE SPECIES : Ash, dogwood, sassafras, tree-of-heaven, and
thornapple

GROUND COVER SPECIES : Asters, blackberry, deer's tongue grass, goldenrod,
poison ivy, spicebush and Virginia creeper

EVALUATION: This site was not identified from the multispectral imagery, but was learned about through contacting property owners. A forest health plot was not established at this site. Ash dieback and other tree mortality observed at the site appears to be related to ground movement (slide and scarp) which may have been associated with longwall mining subsidence.

FIELD ID: 35

MINE: Humphrey No. 7

SITE: D-1-4

COORDINATES : N 176990, E 1307004

STAND STOCKING: Fully stocked, mature, mixed hardwood closed-canopy stand. Plot was centered on a patch of dead and dying aspen

CANOPY TREE SPECIES : Mainly bigtooth aspen (top dieback, mortality, and defoliation) with associated American beech (declining), red maple and red oak

SUBCANOPY TREE SPECIES : Very sparse; mainly young trees of canopy species

GROUND COVER SPECIES : Very sparse due to closed canopy, but consisting mainly of spicebush, with some ferns and a few ash, hickory and beech seedlings

OBSERVATIONS/COMMENTS: This stand was strongly dissected by small streams, and was comprised of very mature timber. There was a fairly large patch of dead and dying bigtooth aspen. This species is rather short-lived and may be dropping out of the stand, or may have a root rot. It is likely that most of the upper canopy stress observed from the imagery at this site was due to the aspen disorder.

FIELD ID: 36
MINE: Humphrey No. 7
SITE: D-3-2
COORDINATES : N 178291, E 1310407
STAND STOCKING: Very open; this mixed hardwood stand had been logged during the past 2-3 years
CANOPY TREE SPECIES : A variety of species including black cherry, elm, hickory, red maple and yellow poplar
SUBCANOPY TREE SPECIES : Mainly trees of canopy species
GROUND COVER SPECIES : Very open area following logging; cover consisted mainly of annuals, Rubus, spicebush and various weeds, with many stump sprouts and tree seedlings

OBSERVATIONS/COMMENTS: This site consisted of a relatively small area that had been heavily logged and contained many cut-off tops and branches on the ground. It is likely that most of the canopy stress observed in the imagery at this site was related to the large amount of logging slash and woody debris on the ground.

FIELD ID: 37
MINE: Humphrey No. 7
SITE: D-3-4
COORDINATES : N 175677, E 1309875
STAND STOCKING: Mixed hardwood stand with many red maples
CANOPY TREE SPECIES : A variety of species including black cherry, red maple and yellow poplar
SUBCANOPY TREE SPECIES : Mainly trees of canopy species
GROUND COVER SPECIES : Predominantly white mustard garlic associated with blackberry, grapevines, poison ivy, raspberry and spicebush and tree seedlings in the more open portion of the stand

OBSERVATIONS/COMMENTS: This site consisted of a small patch of dead and dying red maples. The stressed tree canopy observed at this site was related to this problem of unknown cause.

FIELD ID: 38

MINE: Humphrey No. 7

SITE: D-3-1

COORDINATES : N 179232, E 1316628

STAND STOCKING: Moderately stocked, mixed hardwood stand consisting of a significant number of older black locust trees

CANOPY TREE SPECIES : Mainly black locust (severe leaf miner) with a few associated elm (severe skeletonizing by elm leaf beetle), black cherry (fall webworm infestations) and black walnut (fall webworm infestations); grapevines in canopy

SUBCANOPY TREE SPECIES : Mainly young trees of canopy species, some sumac

GROUND COVER SPECIES : Blackberry, grapevines, greenbriar, poison ivy, raspberry, spicebush and Virginia creeper

OBSERVATIONS/COMMENTS: Most of the upper canopy stress observed in the imagery was associated with black locust trees and was due to severe feeding injury by the adult locust leaf miner insect. However, the elm (skeletonizing), cherry (webworm) and black walnut trees also had severe defoliation.

FIELD ID: 39
MINE: Humphrey No. 7
SITE: D-2-4
COORDINATES : N 167106, E 1299982
STAND STOCKING: A closed canopy, mature oak stand containing considerable oak decline
CANOPY TREE SPECIES : Mainly red and white oak
SUBCANOPY TREE SPECIES : Maples, musclewood, oaks, and sassafras
GROUND COVER SPECIES : Very sparse, consisting of blueberry, ferns, grape, mapleleaf viburnum, and tree seedlings

OBSERVATIONS/COMMENTS: Most of the canopy stress observed in the imagery was likely caused by the presence of about 10 mature, dead oak trees at this site. This mortality appeared to be oak decline, likely caused by previous insect defoliation and drought.

FIELD ID: 40

MINE: Humphrey No. 7

SITE: D-2-5

COORDINATES : N 165767, E 1299249

STAND STOCKING: Two very large, dead oak trees adjacent to a thornapple thicket

CANOPY TREE SPECIES : Mainly oak, with some black cherry, hickory and maples

SUBCANOPY TREE SPECIES : Sassafras and thornapple

GROUND COVER SPECIES : Very sparse, consisting of annuals and tree seedlings

OBSERVATIONS/COMMENTS: The canopy stress observed in the imagery was likely caused by the presence of two very large, dominant, dead oak trees at this site.

FIELD ID: 41
MINE: Humphrey No.7
SITE: D-2-3
COORDINATES: N 169866, E 1300552
STAND STOCKING: One very large, dead oak tree adjacent to an opening
CANOPY TREE SPECIES: Mainly oak, with some ash, black cherry, hickory, sassafras and yellow poplar
SUBCANOPY TREE SPECIES: Young trees of canopy species
GROUND COVER SPECIES: Very sparse

OBSERVATIONS/COMMENTS: The canopy stress observed in the imagery was likely caused by the presence of one very large, dominant, dead oak tree at this site.

FIELD ID: 42
MINE: Humphrey No. 7
SITE: D-2-1
COORDINATES : N 165617, E 1302555
STAND STOCKING: Mature mixed hardwood stand with considerable oak, several canopy gaps in stand
CANOPY TREE SPECIES : Mainly red oak and elm with some maple and yellow poplar
SUBCANOPY TREE SPECIES : Mainly young trees of canopy species with dogwood, black locust and sassafras invading openings
GROUND COVER SPECIES : Very sparse except in openings, which were mainly colonized by spicebush and grapevines

OBSERVATIONS/COMMENTS: The canopy stress observed in the imagery was likely caused by the presence of several large, dominant, dead red oak trees. The adjacent hillside was very strongly terraced, possibly due to mining subsidence and soil creep.