Pennsylvania Trail Gap Study

Methods, Findings and Conclusions

Study Background and Objectives

The trail gap analysis study was intended to be the first step in a long-term process shedding new light on gaps in the statewide trail network and revealing attitudes that will help shape trail building strategies and funding policies over the next five years or more.

The first phase of the study began in September 2008, when DCNR and Penn State collected detailed descriptions of critical gaps, disconnections and areas devoid of footpaths, right-of-ways, and off-road vehicle tracks in Pennsylvania's rapidly growing network of trails. Twenty-one major trail organizations statewide were initially asked to submit descriptions of their top 10 priority trail gaps. These organizations were selected based on their extensive experience in planning, building and maintaining the major trails that comprise the "backbone" of a statewide trail network described in *Pennsylvania Greenways: An Action Plan for Creating Connections,* adopted in 2001.

While the study's first phase was designed to identify physical locations of gaps on major trails, the second phase was designed to assess location-based priorities, social factors and organizational barriers to filling the gaps. Two hundred eighty-two expert advocates sampled from a limited number of trail club leaders and affiliate organizations voiced their opinions on key issues and priorities related to trail development. Though these individuals did not represent average residents or even avid trail users, they provided insights into the attitudes of many of the Commonwealth's most active trail planners, builders and custodians.

Phase 1: Pennsylvania Trail Gap Inventory

The DCNR-Penn State study team identified 21 statewide or regional trail advocacy organizations and asked a contact person (typically an officer) from each organization to identify up to 10 important trail gaps and voids in their trail system. (For the purposes of this study, a gap was defined as "a missing link or connector between existing trails" and a void was defined as "a geographic area with insufficient trails available.")

Participants included one statewide and several regional rails-to-trails organizations; regional greenway commissions; National Scenic Trail organizations; statewide groups representing equestrians, hikers, mountain bicyclers, off-highway/all-terrain vehicle riders and snowmobilers; and one regional organization representing cross-country skiers.

Participants documented each trail gap or void by logging onto an online data-collection site to upload as much of the following information as possible:

□ Contact information for the organization and individual submitting the information

□ The name/location of the trail gap or void

□ A detailed narrative description of where the gap or void is located

□ A narrative explanation of why the gap or void is important

□ A description of land ownership in the area of the gap or void

□ The location and characteristics (including trail name, uses, and access points) of existing trails in the area

□ (If applicable) Surface material, tread width, and corridor width of existing trails that would be linked by filling the trail gap or void

□ (If applicable) Contact information for organization(s) responsible for managing and maintaining trails in the area that would link to the gap or void

Finally, participants were asked to submit copies of available maps or other documents that would help specify the location and characteristics of the gap or void.

The research team contacted all potential participants via e-mail and/or postal mail in August 2008, and encouraged them to consult with officers and board members of their organizations to identify up to 10 important gaps and voids on land-based trails in the geographic area where the organization operates and to submit this information. Participants could access the online data-collection site from August through December 2008.

Major Trails (in part)
County Boundaries
35 Major Trail Gaps (in part)

Figure 3. Trail gaps and voids identified in the Pennsylvania Trail Gap Inventory. May 2009
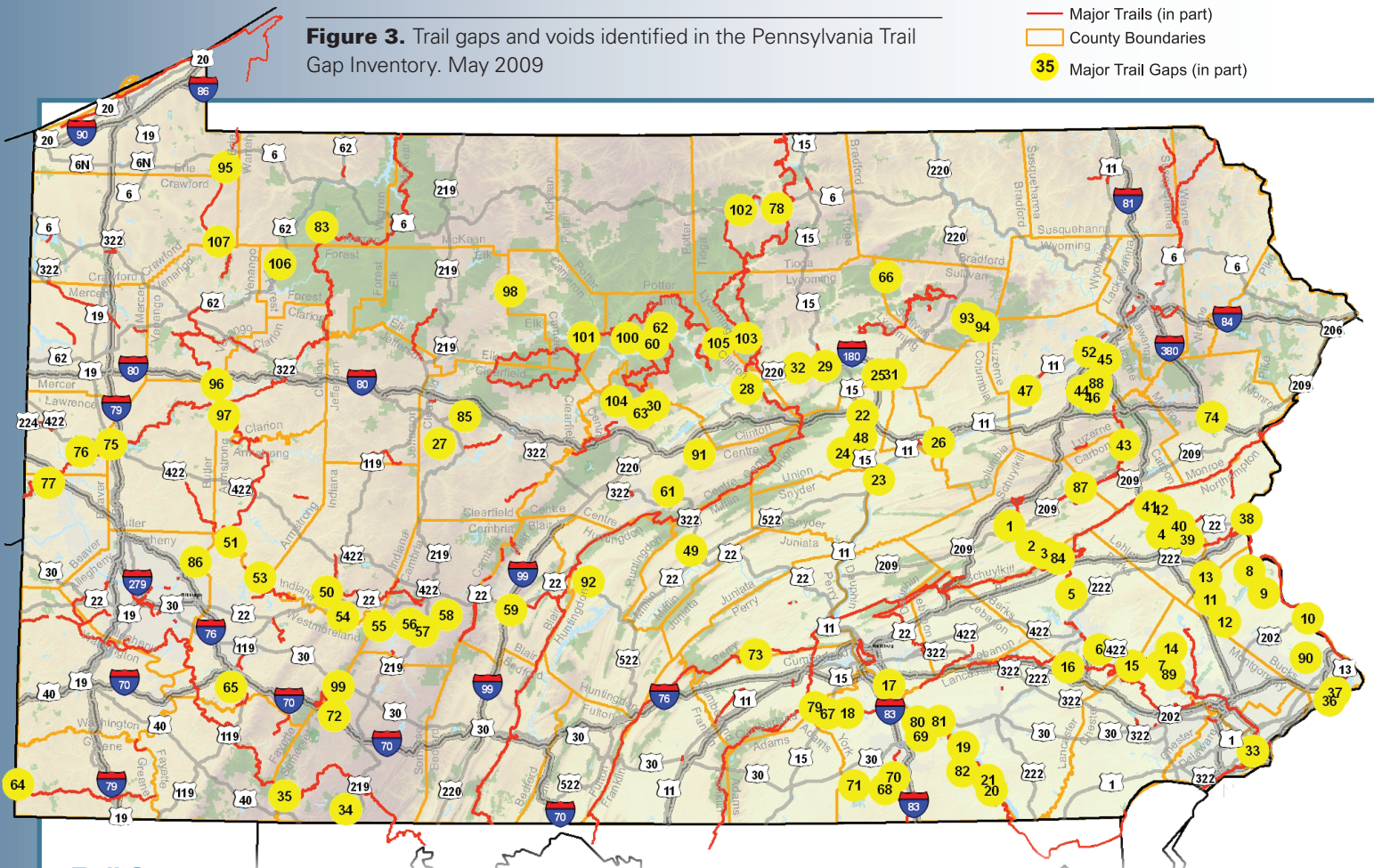
Trail Gaps

1 Schuylkill River Trail, Landingville to Pottsville.
2 Schuylkill River Trail, Auburn to Landingville.
3 Schuylkill River Trail, Auburn Area.
4 Schuylkill River Trail, Hamburg to Kernsville.
5 Schuylkill River Trail, Reading to Hamburg.
6 Schuylkill River Trail, Birdsboro to Gibraltar.
7 Schuylkill River Trail, Montgomery & Chester counties.
8 PA Highlands Trail Network, Riegelsville to Nockamixon State Park.
9 PA Highlands Trail Network, Ralph Stover State Park to Nockamixon State Park.
10 PA Highlands Trail Network, Doylestown to Ralph Stover State Park and Nockamixon State Park.
11 PA Highlands Trail Network, Nockamixon State Park to Quakertown to Green Lane Park.
12 PA Highlands Trail Network, Nockamixon State Park through Perkasie and Sellersville to Green Lane Park.
13 PA Highlands Trail Network, Bethlehem to Coopersburg to Quakertown.
14 PA Highlands Trail Network, Green Lane Park to Pottstown.
15 PA Highlands Trail Network, Schuylkill River Trail from Pottstown to French Creek State Park.
16 Horse-Shoe Trail where roads are currently being substituted.

17 PA Highlands Trail Network, Conewago Recreational Trail across Susquehanna River to co-align with Mason-Dixon Trail.
18 PA Highlands Trail Network, Mason-Dixon Trail System where roads are currently being used.
19 Atglen-Susquehanna Trail, Creswell Station in Washington Boro Village, Manor Twp., to River Park in Columbia Borough.
20 Atglen-Susquehanna Trail, Creswell Station in Washington Boro Village, Manor Twp., to Brenner Hollow Road, Conestoga Twp.
21 Conestoga Trail, extension to Maryland border.
22 Warrior Run Pathways Project, Dewart Village through Watsontown Village and Allenwood Twp. to White Deer Twp.
23 Sunbury Riverfront Trail.
24 Lewisburg to Mifflinburg Rail Trail.
25 Muncy Heritage Park and Nature Trail, Port Penn Village.
26 North Branch Canal Trail.
27 Clearfield/Grampian Rail Trail to Bilgers Rocks.

28 Connection between Lock Haven and Pine Creek Trailhead in Jersey Shore.
29 Connection between Williamsport Riverwalk and South Williamsport Recreation Area / Little League World Series Complex.
30 Bricktown Trail, connect several small communities in Centre and Clinton counties.
31 Downtown Muncy to Muncy Heritage Park and West Branch Susquehanna River.
32 Connection between Pine Creek Trailhead in Jersey Shore and River Walk in Williamsport.

33 Schuylkillbanks between Fort Mifflin and Schuylkill River Park.

34 Connections between the Great Allegheny Passage and Deep Creek Lake, MD.

35 Connections between the Great Allegheny Passage at Meyersdale and Big Savage Mountain, U.S. Rte. 40, and the Youghiogheny River, MD.

36 Delaware and Lehigh Canal, Bristol Borough.

37 Delaware and Lehigh Canal Trail, intersection of towpath and PA Rte. 13 near Tullytown; the Levittown Shopping Center; and intersection of the towpath and the CSX high-speed rail crossing in Falls Twp.

38 Delaware and Lehigh Canal Trail, Riverside Park to Hugh Moore Park via Glendon Bridge.

39 Delaware and Lehigh Canal Trail, Hanover Canal Park to Lehigh Canal Park.

40 Delaware and Lehigh Canal Trail, Catasauqua Borough to Northampton Borough.

41 Delaware and Lehigh Canal Trail, Slatington Borough to Whitehall Twp.

42 Delaware and Lehigh Canal Trail, Bertsch Creek (Lehigh Twp.) to Northampton Borough.

43 Delaware and Lehigh Canal Trail, Glen Onoko to Jim Thorpe.

44 Delaware and Lehigh Canal Trail, Glen Summit.

45 Delaware and Lehigh Canal Trail, Seven Tubs to Mountaintop.

46 Black Diamond Trail, Glen Summit.

47 Susquehanna Warrior Trail, Berwick to Wilkes-Barre Levee Trail along the west bank of the Susquehanna.

48 West Branch RiverWalk, a proposed trail between Lewisburg and West Milton.

49 Juniata RiverWalk, westward extension from Lewistown's Victory Park to proposed turn-around.

50 West Penn Trail and Hoodlebug Trail, connection to Ghost Town Trail.

51 Kiski Valley Trail, Freeport to Leechburg to Apollo.

52 Connection between Tubs and the Levee trails.

53 Main Line Canal, Roaring Run Trail and West Penn Trail connection.

54 Main Line Canal, Blairsville and Seward connection.

55 Main Line Canal, Johnstown and Seward connection.

56 Path of the Flood Trail, between Staple Bend Tunnel and Franklin trailhead.

57 Path of the Flood, South Fork Borough to South Dam Abutment of Flood Memorial.

58 Main Line Canal, link Allegheny Portage Railroad National Historic Site in Cresson Twp. to Ehrenfeld Borough.

59 Lower Trail, extension from Flowing Spring (Frankstown Twp.) through Canal Basin Park (Hollidaysburg) to the Six-Through-Ten Trail.

60 Spur trail from South Renovo to Bloody Skillet Trailhead.

61 Rothrock State Forest to Bald Eagle State Forest.

62 Spur trail from Renovo to Whiskey Springs ATV Trailhead.

63 Link Snow Shoe Rail Trail (Clarence) to Bloody Skillet ATV Trail (Orviston).

64 Replace lost access to Warrior Trail segment near mile 3.

65 Additional trail segments for Laurel Ridge Cross Country Ski Center.

66 Connector between Loyalsock forestry trails in Cabbage Hollow area to State Game Lands #12 trails in Sunfish Pond area.

67 Additional trails are needed in northern York County.

68 Heritage Rail Trail County Park, link Seven Valleys Borough to Hollow Creek Greenway and the Glatfelters Station Trailhead.

69 Heritage Rail Trail County Park, link municipalities east of the Rail Trail to county's rail trail system.

70 Hanover Trolley Trail, Spring Grove Borough to Heidelberg Twp.

71 Hanover Trolley Trail, Spring Grove Borough to Penn Twp.

72 Link existing trails in Laurel Ridge State Park, Laurel Hill State Park, and Forbes State Forest.

73 Tuscarora Trail, PA Rte. 74 to McClure's Gap.

74 Big Pocono State Park, access to trails from the south.

75 North Country National Scenic Trail, McConnells Mill State Park to Moraine State Park.

76 North Country National Scenic Trail, Shenango Twp. to Slippery Rock Twp.

77 North Country National Scenic Trail, South Beaver Twp. to Big Beaver Twp.

78 Mid State Trail, Charleston Twp.

79 Mason Dixon Trail System, linking to Camp Tuckahoe.

80 Mason Dixon Trail System, Codorus Creek to Gut Road.

81 Mason Dixon Trail System, north of Wrightsville Village in Hellam Twp.

82 Mason-Dixon Trail System, Paper Mill Road and PA Rte. 74 in the vicinity of Muddy Creek.

83 Northern Allegheny Mountain Bike Association, singletrack mountain bike trail from Chapman State Park to Hearts Content National Scenic Area.

84 Appalachian Trail, construct bridge for the trail over active train tracks near the confluence of the Schuylkill and Little Schuylkill rivers.

85 Sandy-Du Bois proposed trail system connections to Bilger's Rocks Natural Area, Clearfield/Grampian Rail Trail, Moshannon State Forest, Elliot State Park, Parker Dam State Park.

86 Pittsburgh to Freeport.

87 Jim Thorpe to Tamaqua.

88 White Haven to Wilkes-Barre/Scranton.

89 Pottstown to Valley Forge.

90 New Hope to Philadelphia.

91 State College to Lock Haven.

92 Lower Trail, Alfarata Trailhead to Huntingdon Borough.

93 Connect State Game Lands #13 trails to Ricketts Glen State Park trails and to State Game Lands #57 trails.

94 West of Lake Jean along SR487.

95 Corry to Spartansburg.

96 Emlenton to Foxburg.

97 Parker to Upper Hillville.

98 West Creek Recreational Rail Trail, St Marys to Emporium

99 Between Rte 30 and Laurel Mountain State Park.

100 Link trails west and east of Kettle Creek, between Kettle Creek State Park and Westport.

101 Montour Run to Jerico/Sinnemahoning.

102 Ansonia Area east to Armenia Mountain near Troy.

103 North and west of Jersey Shore along Rte 44 north to Waterville and then to SGL 75 east of Slate Run.

104 Black Moshannon area to Kato area south of the West Branch Susquehanna River to South Renovo.

105 Grugan Hollow Road area (south and west of Haneyville) to Left Hand Sugar Camp Rd.

106 Tidioute/Tionesta area crossing of the Allegheny River.

107 Titusville to Centerville.

Trail group representatives documented a total of 107 gaps and voids in 41 counties distributed throughout the state. Spatial data has been recorded in DCNR's geographic information system (Figure 3).
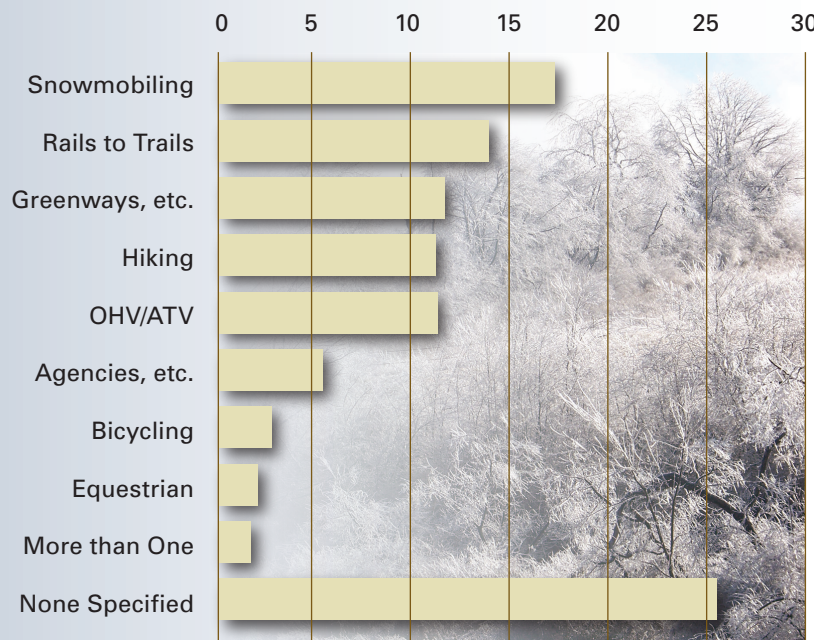
Gaps and voids were identified in greenways systems, regional heritage trails, rail-trails, regional and long-distance hiking trails, including National Scenic Trails, OHV/ATV trail systems, cross-country ski trail systems, snowmobile trail systems, and mountain bicycling trails. It is important to note that the trail gaps uncovered in this study represent only a starting point in identifying trail gaps in Pennsylvania. As other gaps are revealed and described by other trail planning advocates and stakeholders, they will be added to DCNR's database in an ongoing statewide trail gap management strategy, facilitating a more systematic approach to planning and completing the Commonwealth's trail network.

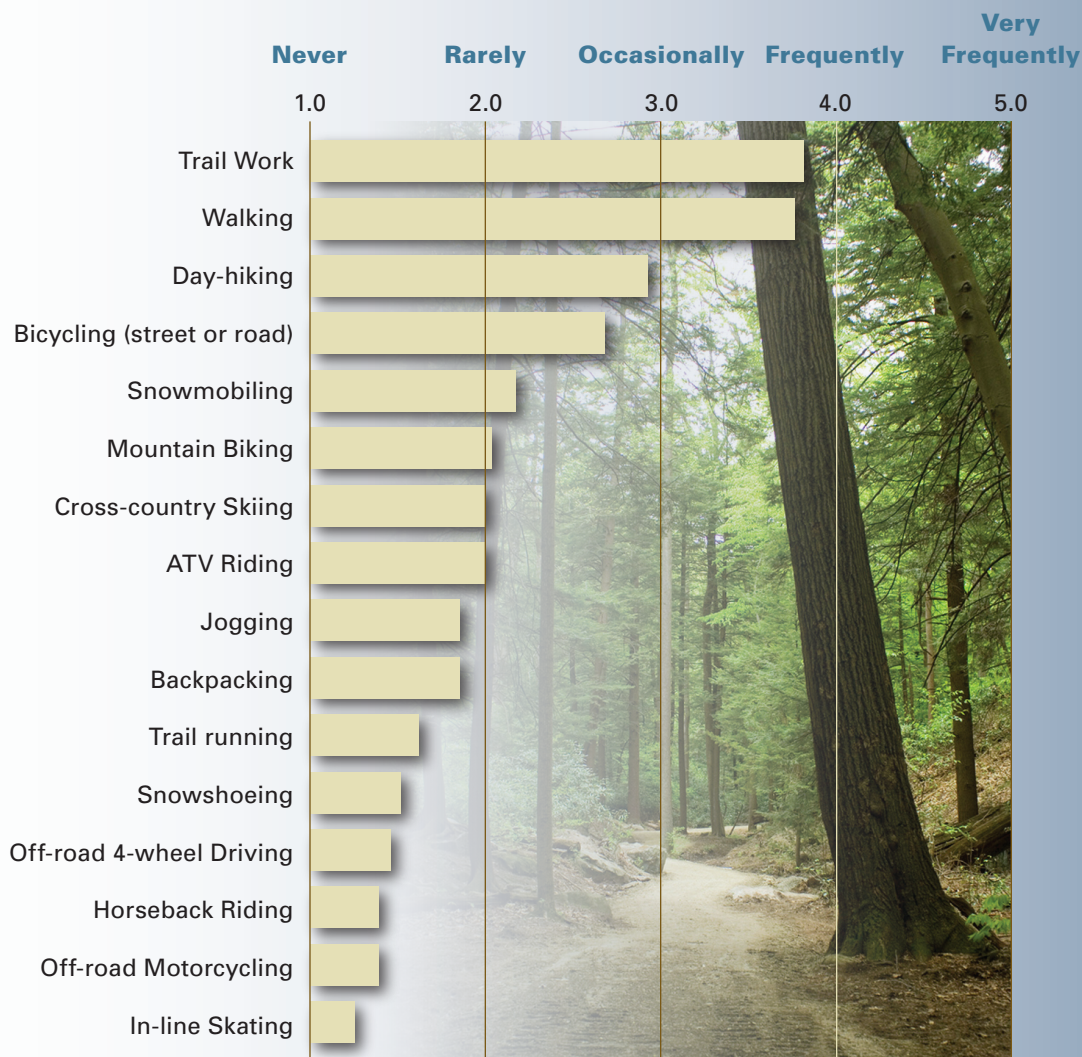## Phase 2: Pennsylvania Trail Gap Priorities Survey

This survey was conducted to assess the importance of factors that influence priority-setting in trail development decisions and to identify effective strategies for developing and maintaining trails. The study population included 530 individuals identified as advocates for Pennsylvania trails. Participants were affiliated with trail user groups, trail planning organizations such as rails-to-trails, regional greenways, heritage areas or

Figure 4. Primary Affiliation of Participants in Trail Gap Priorities Survey

Figure 5. Participation in Trail-based Activities by Respondents in Trail Gap Priorities Survey

	Never	Rarely	Occasionally	Frequently	Very Frequently
	1.0	2.0	3.0	4.0	5.0

Trail Work

Walking

Day-hiking

Bicycling (street or road)

Snowmobiling

Mountain Biking

Cross-country Skiing

ATV Riding

Jogging

Backpacking

Trail running

Snowshoeing

Off-road 4-wheel Driving

Horseback Riding

Off-road Motorcycling

In-line Skating

conservancies, and public agencies, advisory committees, or advocacy groups (Figure 4).

These individuals were asked to complete a questionnaire that solicited their perspective on priorities for filling trail gaps and voids. The questionnaire also asked participants to indicate the relative importance of various factors influencing trail development. This questionnaire included importance rating scales for nine geographic priorities, eight social or experiential priorities, and eight organizational priorities, as well as questions about experience and recommendations for trail development and maintenance, affiliation with trail-based organizations, and participation in trail-based activities. The questionnaire was available to potential participants from late November 2008 through early February 2009.

Key Findings

A total of 282 responses were received (53% response rate). Survey respondents were also asked how often they participated in 16 different trail-based activities (Figure 5). On average, they reported participating "frequently" in trail work and walk-

ing; "occasionally" in day-hiking and bicycling; and "rarely" in 12 other trail-based activities.

Survey participants were asked to rank the importance of geographic, social or experiential, and organization issues related to trail planning and development. Among geographic issues, respondents assigned the highest importance to providing connections between existing trails, closing a gap within an existing trail; and building trails that connect communities to each other (Table 5). Respondents assigned less importance to six other issues.

Table 5. Importance of Geographic Issues Related to Trail Development.

Geographic Issue	Cumulative Importance Points[a]
Providing connections between existing trails	210
Closing a gap within an existing trail	167
Building trails that connect communities to each other	153
Building trails that access open space (parks, forests, game lands, etc.)	93
Providing trails that connect neighborhoods, shopping areas, and workplaces within communities	65
Providing convenient trailheads and access points	57
Building trails that provide access to remote areas	32
Providing trails within walking distance of users' homes	31
Connecting neighborhoods to schools	24

[a] Participants ranked one issue as "Most important" and one issue as "Second."
The "Cumulative importance points" column represents an overall importance rank.

Table 6. Importance of Social or Experiential Issues Related to Trail Development.

Social or Experiential Issue	Cumulative Importance Points[a]
Providing access to outstanding natural scenery	241
Providing trails that accommodate more than one user group	226
Providing trails that are accessible for users with disabilities	99
Providing access to opportunities for solitude	72
Providing easy opportunities	64
Providing access to historic or other cultural resources	56
Providing challenging opportunities	34
Providing trails that can be accessed by public transportation	33

[a] Participants ranked one issue as "Most important" and one issue as "Second."
The "Cumulative importance points" column represents an overall importance rank.

Among social or experiential issues, respondents assigned the highest importance to providing access to outstanding natural scenery and providing trails that accommodate more than one user group (Table 6). Six other social or experiential issues were assigned less importance.

Among organizational issues, respondents assigned the highest importance to securing trail rights-of-way that otherwise would be lost to development, taking advantage of landowners' willingness to allow trail development, and ensuring a high level of local support (Table 7). Five other organizational issues ranked much lower in importance.

Many participants felt that is was important to take full advantage of landowners' willingness to allow trail development near or within their properties; close gaps on existing trails; provide connections between trails; provide access to outstanding natural scenery; and establish trails that accommodate more than one user group.

Respondents were then asked to identify trail-related responsibilities that "make the most sense for your organization to accept."

Researchers used content analysis to group the answers into themes. Among individuals whose primary organizational affiliation was with one of the trail user groups (hiking, horseback riding, snowmobiling, etc.), operational responsibilities were identified most often, including (in descending order):

☐ Trail maintenance and stewardship activities,
☐ Trail management activities,
☐ Trail construction, and
☐ Supplying user information such as maps and brochures.

Table 7. Importance of Organizational Issues Related to Trail Development.

Organizational Issue	Cumulative Importance Points[a]
Securing trail rights-of-way that otherwise would be lost to development	260
Taking advantage of landowners' willingness to allow trail development	170
Ensuring a high level of local support	146
Maximizing local economic development	73
Establishing trail maintenance partnerships with private organizations	66
Establishing private funding partnerships for maintaining trails	40
Establishing private funding partnerships for building trails	36
Establishing trail construction partnerships with private organizations	33

[a] Participants ranked one issue as "Most important" and one issue as "Second."
The "Cumulative importance points" column represents an overall importance rank.

Among individuals whose primary organizational affiliation was with one of the greenways, heritage areas, conservancies, or public agencies, or an advisory or advocacy group, organizational responsibilities were identified most often, including (in descending order):
☐ Advocating and promoting trail development,
☐ Coordinating and/or assisting local groups,
☐ Supervision of design, contracting, and construction,
☐ Developing and maintaining relationships with landowners,
☐ Fundraising, and
☐ Planning trail development.

Respondents were also asked to reply to two open-ended questions and describe their own experience addressing the need to fund trail development and maintenance. Content analysis of responses to these two questions revealed similar themes. The theme that occurred most often was seeking diverse funding sources — federal, state, local, and private money. Individuals described going about this differently, however. Some advocated seeking federal or state money first, and then using it to attract local and private funds, while others advocated the opposite. Other common themes included building and coordinating community or regional support; recruiting volunteers; and fund raising. Rather than describing their own experiences seeking funding, some respondents chose to suggest "solutions" to the funding challenge. These suggestions included simplifying DCNR's grant writing process and/or providing more support; increasing the availability of federal transportation enhancement funds from the Pennsylvania Department of Transportation; and (particularly among individuals affiliated with motorized trail use) trail user fees, a dedicated fuel tax, and dedication of registration fees entirely to trail development and maintenance.