

Wichita Mountains Wildlife Refuge Outreach Summary

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Executive Summary

Public outreach to develop bicycling, walking, and accessible trails at Wichita Mountains Wildlife Refuge occurred principally during late October through mid-November 2012. Outreach activities introduced target trail audiences to planned trails and collected input on trail design preferences. Target trail audiences include families with children, youth, people with physical disabilities, active seniors/retirees, and casual recreationalists.

Findings from the outreach process indicate that target trail users prefer paths separated from motor vehicle traffic by a barrier or by a distance from the road 10 feet or greater. Outreach participants most prefer natural or asphalt surfacing, and their preferred trail widths vary depending on activity. Overall, natural surface walking trails 6-feet wide or narrower and shared use asphalt trails approximately 10-feet wide would meet most target audiences' needs for non-motorized transportation options on the Refuge.

In addition to the trails themselves, target audiences seek a variety of support facilities or services to enhance their experiences on the Refuge. Safety is a key factor in target audiences' interest in using trails. Visitors want to be safe from motor vehicles and large mammals. They also need to know how or where to recruit help for emergencies. Trailhead facilities and services such as restrooms, information, shade, and water all enhance the experience. Presence of these facilities could make the difference for visitors choosing to stop at one location over another without them. Target visitors would like their wildlife-dependent recreational activities to have a social dimension, and trails should have enough room for visitors to recreate side by side. Variety makes for a dynamic, engaging environment rich with opportunity to explore and discover. Trail experiences that change and include different habitat types encourage visitors to rediscover a trail during every visit. Nature play areas located along trails enhance trail safety and provide places for children and youth to discover the Refuge's treasures.

While youth and people who use wheelchairs prefer somewhat different facilities or services than all outreach participants, these other interests are reflected in the overall summary findings. In short, facilities that provide varied experiences and that are designed with youth and people who use wheelchairs in mind will meet the public's expectation of safe and enjoyable trail experiences that provide opportunities to engage in wildlife-dependent recreation.

Introduction

The 2012 Public Lands Transportation Scholar collected input from Wichita Mountains Wildlife Refuge staff, project partners, and the public to develop three accessible trails for biking and walking on the east side of Refuge. Early input helped shape the Scholar's understanding of the project's assets, needs, opportunities, and constraints. The substance of this early understanding assisted the Scholar in developing assessment criteria to facilitate decision-making among the different trail design options.

With three categories of design elements as the building blocks for trail design options, the Scholar conducted a series of targeted public outreach meetings culminating in a well-attended public open house in Lawton on November 14, 2012. These outreach meetings and the open house provided an opportunity for the public to express their preferences for trail design across different kinds of activities: bicycling, walking, running, wheelchair use, and pushing strollers.

The results of the public outreach process follow. The questions asked during the outreach process derive from the early input process with Refuge staff, project partners, and the public and subsequent development of the assessment criteria.

The Outreach Summary is intended as a tool to inform Refuge staff, project advisors, and community partners about different trail audience preferences for trail design. This summary, likewise, provides documentation of the outreach process for future assessments.

Methods

Early Input Process

The early input process consisted of informal conversations with individuals or small groups, two organized stakeholder meetings, and regular attendance and outreach during Fit Kids monthly meetings and Friends of the Wichitas board meetings. Additional informal outreach occurred during field research by the Scholar and her encounters with Refuge visitors during this activity.

Refuge

Early input from Refuge staff involved individual conversation with department managers and some departmental staff and include: Biology, Law Enforcement, Maintenance, Visitor Services, Fire, and Management. Conversations with Biology, Maintenance, and Law Enforcement also included meeting notes. Other input was integrated in Refuge work products, such as a project poster developed for the Comprehensive Conservation Plan (CCP) public open house (August 13 & 14, 2012), and categorized visually in different project maps.

The questions asked of Refuge staff followed no script but were intended to orient the Scholar to how the department interfaces with transportation projects and what the major concerns or issues might be related to transportation facilities or developing trails.

Stakeholder Meetings

The Refuge hosted two stakeholder meetings with community members, one on July 31, 2012 in Medicine Park, OK, titled Bicycle and Pedestrian Interconnectivity, and the other on August 2, 2012 in Apache, OK, titled Byway Design and Community Opportunity. Both meetings asked participants to identify community and/or regional assets, needs, opportunities, and constraints. Both meetings also provided opportunity for participants to rate their preferences for byway signage and byway gateways. Additionally, the meeting in Medicine Park asked participants to identify facility users for roads and trails on the Refuge's east side and on adjoining property.

Invitations for these stakeholder meetings were distributed through phone calls, email, and mail. A list of byway participants served as the foundational list of people to contact. After initial contact, some of the stakeholders suggested other people who should be invited to the meetings.

Public Outreach

The Public Outreach process consisted of an October and November 2012 series of targeted outreach meetings to groups who represent the target audiences for the Refuge trails project: families with children, youth, people who use wheel chairs or other mobility aids, active seniors/retirees, and casual recreationalists. These meetings culminated in a mid-November public open house where all interested parties could provide input on the trails planning process.

The outreach meetings and public open house were announced through existing partner channels and through newspaper stories. Fit Kids coalition members were invited to co-host outreach meetings with their constituents. A poster and brief presentation at the October Fit Kids meeting provided members with information about the outreach goals and process. Additional outreach to coalition members occurred through email and phone communications. Lawton Public Schools came forward following the October Fit Kids meeting to co-host the public open house. An announcement at the November Fit Kids meeting informed coalition members of the upcoming open house, encouraging them and their constituents to attend. Select project partners who would provide additional information at the open house were contacted via phone, email, and in person and were encouraged to announce the open house among their community contacts and stakeholders. Lawton Public Schools recruited participants internally to attend the open house. A newspaper story in the *Lawton Constitution* announced the

event on Sunday, November 11, 2012. A story in the *Constitution* reporting on the open house published Thursday, November 15, 2012 attracted input from a property owner who had not previously heard about the open house or trails planning activity.

The outreach meetings, called “like-storms,” provided target trail audiences with an opportunity to share their individual preferences (or “likes) for the trail design elements. Both the like-storms and the open house presented participants with an overview of the planned trails and described the different design elements. Participants responded to questions about what they like to do at the Refuge, what’s important to them when planning a trip to a place like the Refuge, and what they think would be fun to do while visiting the Refuge. Following the design elements description, participants filled out an input sheet to indicate their personal preferences for design elements – surfacing, trail width, and shared use or separation from motor vehicles – for different activities: bicycling, walking, running, wheelchairs or mobility aids, and pushing strollers (the like-storm input sheet is included as Appendix A). The outreach meeting with Friends of the Wichitas involved a different format than subsequent like-storms, and attendees at that outreach meeting did not fill out an input sheet.

Responses from the input sheets were recorded in spreadsheets. A “1” was used for a positive response. In some instances, respondents marked more than one design element per category. For multiple replies, a “1” was used for all positive responses. Some respondents ranked dual preferences. In this case, “1” indicates primary preference, and “.5” indicates secondary preference.

Responses were aggregated based on target audience types: families, youth, people who use wheelchairs or other mobility aids, and the community at large – a mix of parents, children, casual recreationalists, community leaders, and active recreation enthusiasts. Each audience type data collection was reviewed to assess how well participants understood the concepts. While there were some questionable responses, the data collections as a whole reflected understanding audiences.

All collections were further aggregated into a single set of preferences for each activity type. See Table 2 for this single set of aggregated preferences.

Following the November public open house and initial analysis of the outreach results, targeted outreach to people who use wheelchairs and other mobility aids supplemented the data collection effort. This outreach, conducted with wheelchair, scooter, and cane users in Portland, Oregon, confirmed that the able-bodied respondents perceive trail design preferences for people who use wheelchairs differently than people who use mobility aids do. While the sample from people who use mobility aids is considerably smaller than the other samples, the results are recorded as an independent group to clarify this target audience’s preferences. This data set is also aggregated in the complete data collection.

Data

Data gathered during the outreach process includes a project partners list, the number of attendees at outreach events, and design element preferences for different target audiences.

Project Partners

- Fort Sill Army Base
- Medicine Park Museum of Natural Science
- Town of Medicine Park
- City of Lawton Parks and Recreation Department
- Fit Kids of Southwest Oklahoma
- Friends of the Wichitas
- Lawton Public Schools

Table 1: Outreach Events

Event	Date	Group/Organization	# Attendees
Stakeholder Meeting	July 31, 2012	Medicine Park – Interconnectivity	27
Stakeholder Meeting	August 2, 2012	Apache – Byway Design	13
Outreach Meeting	October 20, 2012	Friends of the Wichitas	6
Like-storm	October 24, 2012	Run Hers	13
Like-storm	October 29, 2012	Lawton Family YMCA	8
Like-storm	October 31, 2012	Lawton Public Schools PE teachers	17
Like-storm	November 5, 2012	Park Lane Elementary 4 th and 5 th grade students	64
Like-storm	November 5, 2012	Town of Cache	7
Like-storm	November 6, 2012	Lawton Area Girl Scouts Leaders	21
Refuge Trails Open House	November 14, 2012	Public at large	147
Like-storm*	December 15, 2012	Mobility advocates	6

Total Event Attendees	329
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* Outreach with mobility advocates occurred as a series of one- and two-person meetings between December 10, 2012 and January 23, 2012 in Portland, Oregon.

Design Element Preferences

The following charts and tables summarize responses to the input sheets received during the like-storms and the open house.

Figure 1 reflects an aggregated total preference for shared use or separation from motor vehicle traffic without distinguishing among different activities. All activities rated similarly in the proportion of preference they received across activities. Table 2 shows the differences among activities in this category, and discussion of these results occurs in the "Analysis" section under "Shared Use and Separation."

Figure 2 and 3 reflect data aggregated for all activities for surfacing type and trail width. In these figures, preferences for wheelchair use reflect all responses for wheelchair use as represented in Table 2.

Figure 2: Trail Surfacing Preferences

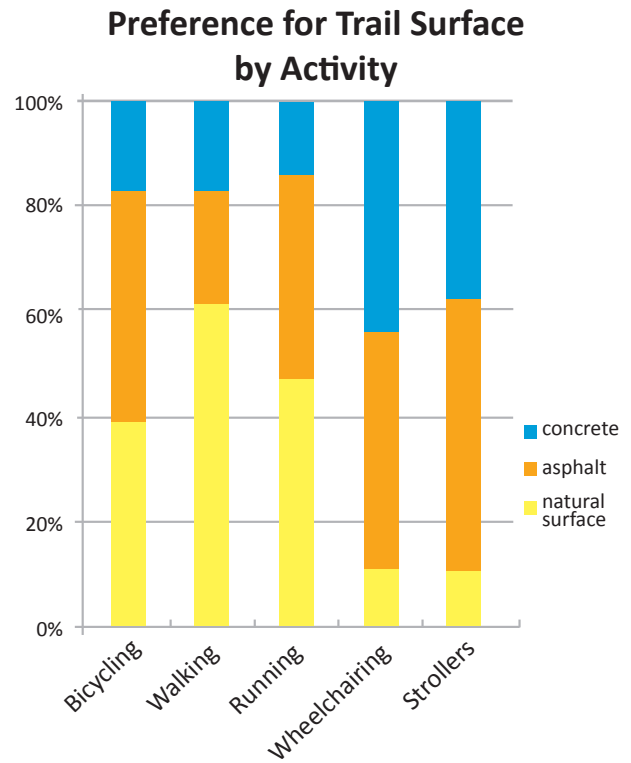


Figure 1: Averaged Preference for Shared Use or Separation from Motor Vehicles for All Activities

Preference for Separation from Motorized Vehicles

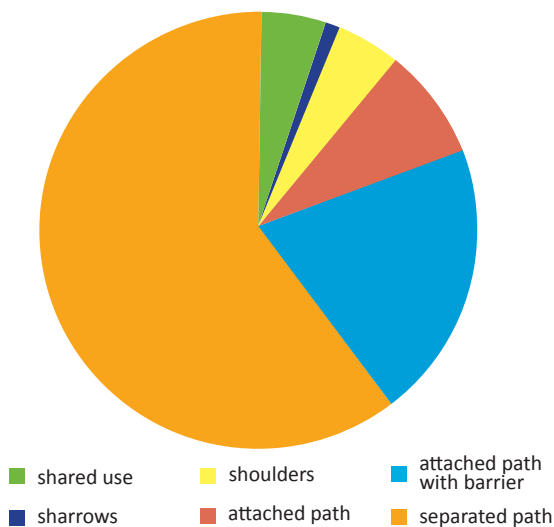


Figure 3: Trail Width Preferences

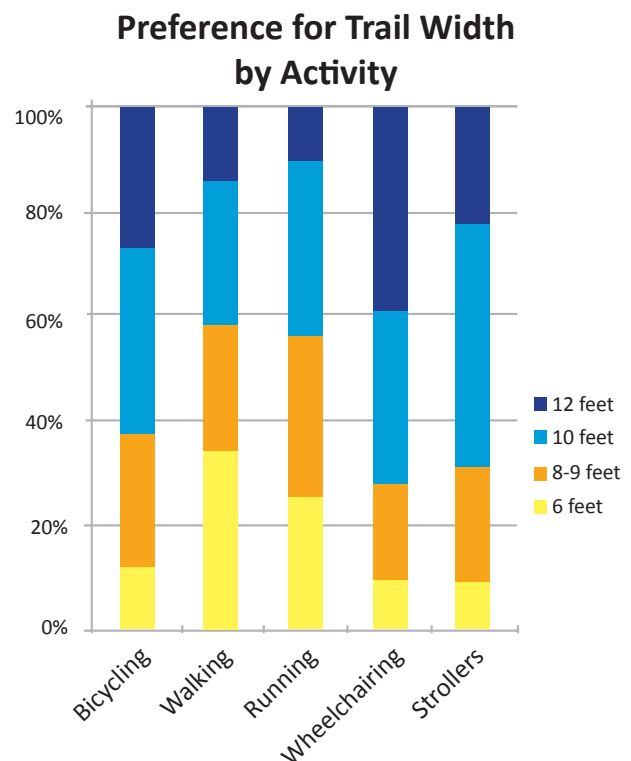


Table 2 summarizes all preferences for trail design elements. Total respondent numbers vary among activity. Not all respondents indicated a preference for every activity, and the 64 youth respondents were not asked to indicate a preference for pushing strollers. The following values indicate total respondents for: bicycling=215; walking=223; running=211; wheelchairs=178; strollers=126.

Table 2: Comprehensive Outreach Preference Summary

	trail design options			trail widths				shared use & separation						
	surfacing	natural surface	asphalt	concrete	6 feet	8-9 feet	10 feet	12 feet	shared use	sharrows	shoulders	attached path	attached path with barrier	separated path
Bicycling														
TOTAL	86	95.5	38		26	55	77	58	13	5	21	29	53.5	110
	40%	44%	18%		12%	25%	36%	27%	6%	2%	10%	13%	25%	51%
Walking														
TOTAL	141	49.5	39		77	55	62	31	14	0	14	23	43.5	135
	63%	22%	17%		34%	25%	28%	14%	6%	0%	6%	10%	19%	60%
Running														
TOTAL	103	84	31		53	64	69	21	13	4	11	21.5	41.5	124
	49%	40%	15%		25%	30%	33%	10%	6%	2%	5%	10%	20%	59%
Using Wheelchairs/Mobility Aids														
TOTAL	20	80	79		17	32	58	68	8	2	4	9	41	116
	11%	45%	44%		10%	18%	33%	38%	4%	1%	2%	5%	23%	65%
Pushing Strollers														
TOTAL	14	66	49		11	27	56	27	4	0	1	5	23	92
	11%	52%	39%		9%	21%	44%	21%	3%	0%	1%	4%	18%	73%

Tables 3 and 4 collect results from youth and from people who use wheelchairs. In Table 3, 64 youth responded to the input sheet. In Table 4, five adults responded to the input sheet.

Table 3: Youth Preferences

trail design options	surfacing			trail widths				shared use & separation					
	natural surface	asphalt	concrete	6 feet	8-9 feet	10 feet	12 feet	shared use	sharrows	shoulders	attached path	attached path with barrier	separated path
Bicycling													
TOTAL	34 55%	6 10%	22 35%	5 8%	11 18%	17 27%	29 47%	5 8%	2 3%	6 10%	2 3%	16 26%	32 52%
Walking													
TOTAL	31 48%	6 9%	27 42%	17 27%	15 23%	13 20%	19 30%	8 13%	0 0%	7 11%	10 16%	14 22%	25 39%
Running													
TOTAL	32 52%	16 26%	13 21%	12 19%	15 24%	24 39%	10 16%	7 11%	4 6%	5 8%	7 11%	14 23%	26 42%
Using Wheelchairs/Mobility Aids													
TOTAL	11 19%	23 39%	25.5 43%	3 5%	6 10%	15 25%	35 59%	5 8%	1 2%	3 5%	3 5%	18 31%	29 49%

Table 4: Preferences from People Who Use Wheelchairs

trail design options	surfacing			trail widths				shared use & separation					
	natural surface	asphalt	concrete	6 feet	8-9 feet	10 feet	12 feet	shared use	sharrows	shoulders	attached path	attached path with barrier	separated path
Using Wheelchairs/Mobility Aids													
TOTAL	3 60%	3 60%	1 20%	4 80%	1 20%	1 20%	2 40%	0 0%	0 0%	0 0%	2 40%	5 100%	4 80%

Analysis

Responses indicate some variation for surfacing type and trail width among different activities, whereas the general pattern for shared use or separation from motor vehicle traffic remains fairly consistent across all activities. Generally, public input reflects preference for social and intimate trail experiences separated from motor vehicle traffic.

Surfacing

A majority of respondents prefer a natural surface trail for walking (63%) and running (49%). The target audiences present a clear interest in mountain biking opportunities with 40% of respondents preferring to bike on a natural surface trail. Asphalt proves a preferable surfacing material for respondents, and 40% or more respondents prefer this surfacing type for all activities except walking. Concrete rates highest for wheelchairing and pushing strollers (44% and 39% respectively) although in no case does concrete gain preference over asphalt or natural surface.

In Table 5, below, large dots indicate outreach participants' strongest preference for surfacing type by activity. The dots get smaller as preference strength diminishes.

Table 5: Trail Surfacing Preference by Activity

	natural surface					asphalt				
	walking	running	bicycling	strollers	wheelchair	walking	running	bicycling	strollers	wheelchair
6 feet	●	●			●	●	●			●
8-9 feet	●	●	●			●	●	●	●	
10 feet	●	●	●				●	●	●	●
12 feet			●		●			●	●	●

Note: Wheelchair preference is based on input from people who use wheelchairs.

These preferences indicate some overlap in surfacing type by activity. Of note is the strong preference for narrow, natural surface walking trails and wide asphalt trails for pushing strollers. Shared preference among running, bicycling, and wheelchair use suggests that visitors would be happy using either or both surfacing types and that most consideration for surfacing should be given to areas where the Refuge would like to attract walkers and people pushing strollers.

Trail Width

A majority of respondents prefer a narrower trail for walking with 34% preferring a 6-foot wide trail. While respondents did not rate running as highly as walking for 6-foot width, the activity still captured primary preference from a quarter of respondents. Respondents were not asked to rank trail widths narrower than 6 feet because 6 feet is the minimum width for maintenance vehicles to access the trail. However, it might be worth considering that any respondent who indicated a 6-foot wide trail might potentially be interested in a trail narrower than 6 feet.

Standard shared use paths accommodate a mix of bicycle and pedestrian traffic within a 10-foot wide trail. Respondents ranked 10-foot wide trails as one of four width options. For biking (36%), wheelchairs (33%), and pushing strollers (44%), this standard 10-foot wide shared use trail satisfies respondents' preference for trail width.

Respondents had an opportunity to rate a trail width wider than the 10-foot standard. Wheelchairs (38%) received the highest preference for a 12-foot wide option although the absence of actual wheelchair users in the sample could suggest that preference for a wide trail might be perceived rather than actual.

Respondents also had two options to rate trail widths narrower than the 10-foot standard – one at 6 feet and the other at 8 or 9 feet. One respondent did note preference for a 1-foot wide trail for biking, walking, and running. Regardless of the actual foot-distance of the trail, responses for a 6-foot wide trail suggest desire for an intimate experience with the surrounding environment. Walking and running both garnered a majority of responses for trails narrower than 10 feet – 59% and 55% respectively. At 37%, bicycling came in fairly positive for support of narrower trails, again indicating a preference for mountain biking options.

In all, more preference for trails narrower than the 10-foot standard exists, and respondents demonstrate less preference for trails wider than the 10-foot standard. This preference pattern can be seen in Table 6 with strongest preference for 10-foot wide trails.

Table 6: Trail Width Preference by Activity

	walking	running	bicycling	strollers	wheelchair
6' natural	●	●			●
6' asphalt	●	●			●
8-9' natural	●	●			
8-9' asphalt	●	●	●	●	
10' natural	●	●	●		●
10' asphalt		●	●	●	●
12' natural			●		●
12' asphalt			●	●	●

Note: Wheelchair preference is based on input from people who use wheelchairs.

Shared Use and Separation

A definite majority of respondents prefer trail facilities separated from motor-vehicle traffic for all activities. Out of six options for degree of separation from motor vehicles, pushing strollers (73%) rated highest and bicycling (51%) rated lowest. By including the option for attached path with barrier, three quarters of all respondents prefer this level of separation from motor vehicle traffic.

While bicycling rated lowest for “separated path,” bicycling on this type of facility still received over half the total responses. For the target audiences, bicycling on a path separated from motor vehicle traffic is clearly the facility of choice. For all other categories of shared use and separation, bicycling received the most responses over any other activity (except for “shared use” where it shares preference with walking and running). The higher rating for bicycling across facilities suggests that people may be more inclined to perceive bicycling as a form of transportation – something that has a place on the road – or that they may perceive some conflicts mixing bicycling with other activities.

Two respondents (and perhaps some that indicated “shared use” as their preference) expressed feeling more safe on a separated path but conflicted in that preference when weighing the effects of a separate path to wildlife and habitat. One respondent at the open house addressed an interest in preserving the land for wildlife and felt strongly that no facilities for people should be added to the Refuge. His original inclination was toward a separated path for all activities. Another open house respondent stressed that a separated path would be “ideal,” but he expressed concern that a separated path would adversely affect habitat for wildlife.

“Sharrows” elicited a low response rate. One like-storm comment indicated that people are unfamiliar with sharrows as a traffic control device. Respondents’ unfamiliarity with this design option may have contributed to the low response rate it received. Sharrows may have ranked more highly among specialized recreationalists, such as road cyclists, who are more likely to have encountered or noticed sharrows than the casual recreationalists who were asked about their preference for trails.

Youth

Park Lane Elementary 4th and 5th grade students indicated their preferences for trail design options after a brief presentation in a structured classroom environment. Students independently filled out the input sheet. Responses were checked for task comprehension, and while some students demonstrate confusion in their responses, the full collection indicates that they understood the exercise.

Youth indicate a split preference for natural surface (slightly more preferred) and concrete, generally prefer wider trails, and definitely prefer paths separated from motor vehicle traffic by distance or barrier.

The students appear to draw on their personal experiences in responding to the input sheet where 'natural surface' means 'dirt road' or 'hiking trail,' 'asphalt' means 'road,' and 'concrete' means 'sidewalk.' The Park Lane Elementary neighborhood abuts the Lawton city boundary and exhibits suburban residential development patterns – few interconnected streets and few access points to the major roads. Neighborhood streets allow on-street parking and have no sidewalks.

Surfacing

Natural surfacing emerged as a clear preference for youth in all activities except wheelchair use (at 19%, students rated natural surface for wheelchairs substantially higher than other able-bodied input groups). Students also rated concrete highly, but not as high as natural surface. One student commented that concrete can break and have uneven areas, leading to tripping and tumbles.

Trail Width

Mathematical concepts were used to explain differences in trail width with one person needing 3' of trail width. 'Wiggle room' explained why there is an extra foot of trail width in the 10' standard that accommodates one person traveling in each direction and room to pass for a third. While students appeared to have some challenges providing input on trail width, their overall responses do demonstrate a pattern for more space rather than less on the trails.

Youth appear to consider trails social environments, places where they play and appreciate wildlife with other kids or family members. They prefer wider trails to accommodate the group nature of trail activities.

Bicycling (47%) and wheelchairs (59%) rated highest for 12'-wide trails. Youth may consider that people using wheelchairs need extra space on the trail for safety. Preference for a wider trail for bicycling could indicate more perceived need for wiggle room, especially if the students envisioned many kids riding bikes on a trail at the same time.

Walking received fairly even response distribution among all trail widths. Lack of a clear preference for walking trail width suggests that trail experiences that provide width varieties would likely be most engaging to young audiences. For example, a narrow, intimate trail coursing through trees or an edge environment that widened into a nature play area at an edge or open area would satisfy youth needs for movement, activity, diverse experiences, and discovery.

Running presents as a hybrid of student responses for bicycling and walking. Students may equate running speeds with a greater need for safety provided by a wider trail (39%

for 10' and 16% for 12'). Yet, on feet rather than wheels, youth may feel closer to the natural environment. A narrower trail could provide opportunities to see lizards, butterflies, snakes, spiders, birds or other small wildlife (24% for 8-9' and 19% for 6').

Shared Use and Separation

Students rated paths separated by distance or a barrier as their preference for all activities. Bicycling received the highest rating for a separated path (52%) further supporting a wiggle room safety buffer. These same respondents might also be interested in mountain biking (55% prefer bicycling on a natural surface). Wheelchairing rated second highest for a path separated from motorized traffic (49%), reinforcing the concern for safety students appear to express by preferring wide trails for wheelchairs.

Some students indicated a preference for facilities on the road, and this interest can be interpreted in several ways. First, a preference for road facilities could indicate misunderstanding on the students' part about what these shared facilities are. Second, students could be drawing upon their experiences to formulate a preference. Facilities around the school and in most of the Lawton area have no designated space for bicycling and walking, making the street a probable place where youth might walk, run, or ride a bike. In relatively quiet suburban or rural neighborhoods, the street (or dirt road) could be a likely activity space. Third, students might not hold the same safety concerns as their parents or guardians. For these students, the street could be an interesting, action-filled space where they want to be.

People Using Wheelchairs

Ratings for trail design elements significantly differ between actual wheelchair users and able-bodied respondents' perceptions of what wheelchair users prefer. While the sample size for actual wheelchair users is much smaller than the sample size for non-wheelchair users, the focus of this analysis will only cover responses from actual wheelchair users. Wheelchair users in Portland, Oregon, were asked their preferences for trail design and recreational opportunities in a place like the Refuge.

Respondents prefer narrow, natural surface trails separated from motor vehicle traffic by, at minimum, a barrier or distance as appropriate.

Respondents reiterated that people who use wheelchairs want the same kinds of experiences as everyone else. Different types of facilities should not be planned for wheelchairs, but facilities that are already being planned should include accommodation for people with physical disabilities. Like the overall preference for walking facilities, people who use wheelchairs entirely support natural surfacing and a 6' wide trail. One respondent indicated that a 5' wide trail would be sufficient for wheelchair use. Natural surface trails can be more difficult for people who use manual wheelchairs than motorized wheelchairs. A harder surface, such as asphalt, can make the trail easier to

use, and resting areas, regardless of trail surfacing, can also provide needed relief for people who have to work harder to use a trail. Providing clear descriptions of trail facilities and difficulty at trailheads enhances accessibility far more than design elements alone.

Wheelchair users also prefer paths separated from motor vehicle traffic by a barrier or distance. For safety reasons, mixing wheelchairs with motor vehicle traffic should not be considered. Only when motor vehicle traffic travels a maximum of 10 m.p.h. may mixing the two modes be considered.

Findings

Trails developed on the Refuge for families with children, youth, casual recreationalists, people who use wheelchairs, and active seniors/retirees should meet these audiences' safety needs while providing diverse natural and social spaces for them to engage Refuge resources.

Trails on the Refuge that meet the target audiences' needs should be separated from motor vehicle traffic. In locations where the Refuge cannot create a separate trail, providing a designated space for non-motorized transportation on the side of the road with a separating barrier would be most suitable. Where occasional motorized traffic may mix with non-motorized use, motor vehicle design speed should be 10 m.p.h. or less.

As much as is feasible, trails should include natural surfacing. In some areas, trail surfacing could include a mix of surfacing options, such as a 5'-wide asphalt surface with a 2'-wide natural surface area adjacent. Surfacing materials should be either natural soils (potentially with soil stabilizer), compacted gravel/crushed rock, or asphalt. Surfacing color should blend into the surrounding environment regardless of surface type.

Trail widths will vary depending on location, visitation, and function. Trails likely to experience higher visitation, especially by children or slow-moving adults, should have a wider footprint to allow people to walk abreast, to accommodate mobility aids, and to provide visitors with passing room around one another. A 6'-wide trail may sufficiently accommodate this high visitation scenario; however, if bicycles mix with this slow pedestrian traffic, a wider trail would be needed.

Trail design speed should be low for the target audiences but give consideration to overall trail functionality. For example, spur trails, areas with interpretive and/or nature play elements, or areas that experience high visitation from youth or people with disabilities require slower design speeds (no faster than 13-14 m.p.h.) than trail segments that simply connect people from one destination to another (18 m.p.h.).

Varied trail experiences should be included to maintain interest, draw visitors along the trail, encourage observation, and provide an array of animal, plant, and cultural interpretation and education opportunities. These varied trail experiences could include variable trail widths, particularly in places with nature play areas, and trail siting that follows habitat edges and that makes use of natural gateways.

Outreach participants identified several elements that would enhance visits to a place like the Refuge: restrooms, safety, parking, information, signage, water, shade, and nature/wildlife viewing opportunities.

- Target trail audiences identified restrooms as the most important amenity when planning a visit. Attractive trailheads should include accessible restrooms, particularly for locations with high use from children or seniors.
- Several participants identified safety as a highly important consideration. Safety includes places to use non-motorized modes without motor vehicle traffic/conflict, emergency contact services (infrastructure or responders), and some kind of protection from animals.
- Many participants expressed interest in signage and information that helped them find trailheads, trails, and destinations and that indicate trail difficulty and points of interest, interpretive information (plants, animals, history, and structures), distance to services, and safety information – such as what to do when you encounter a bison on the trail or where to contact someone in case of an emergency.
- Important to note, target audiences expressed interest in diverse nature and wildlife viewing opportunities. These opportunities include small vertebrates and invertebrates, plants and wildflowers, and geology in addition to large mammals. Children, in particular, enjoy plants, butterflies, snakes, lizards, fish, tarantulas, skipping rocks, and climbing trees.

Bicycling

Facilities on the Refuge should include options for the target audiences to ride bicycles on paved paths and natural surface trails. The target audiences seek a trail environment that provides enough room to socialize (ride abreast), appreciate the natural environment, and accommodate a need for wiggle room. These audiences do not seek single-track mountain bike facilities nor road shoulders; however, they do seek interesting and engaging trails that lead to destinations and wildlife viewing opportunities. Providing bicycle parking at destination areas or nature play sites encourages visitors to engage Refuge resources and organizes the trail space to enhance safety.

Walking

Target trail audiences seek walking environments similar to the hiking trails they might find on the Refuge's west side. They prefer natural surface trails 6-foot wide or narrower situated away from roads. Like the bicycle riders, walkers appreciate trails that provide enough room to socialize and that allow them to engage the natural environment. They seek interesting and engaging trails with interpretation that lead to destinations, discovery, and wildlife viewing opportunities.

Running

Facilities for running, like bicycling, should include natural surface and paved options. Target audiences expressed interest in narrow, natural surface trails suitable for trail running. These trails, like the walking trails, could be 6-foot wide or narrower and might include singletrack trails or narrow, natural surface running trails adjacent to paved paths. Target audiences who enjoy running would equally use paved paths and would like trails wide enough to run abreast or in social groups (not wider than 10 feet). Unlike slower walking and interpretive trails, running provides visitors with a kinesthetic appreciation of the environment and opportunities to observe wildlife. Trails that traverse interesting edges and that include terrain variation enhance the in-motion experience of Refuge resources. Running facilities should link to other trails and provide a variety of distance opportunities. Runners are less likely to seek destinations, nature play, or out-and-back trails but are more likely to use loop or interconnected trails.

Using Wheelchairs or Mobility Aids

People who use wheelchairs or mobility aids emphasize that trail facilities should be designed for the planned experience – such as walking and nature play – and adapted for wheelchairs and other types of mobility aids. Natural surface or asphalt trails would be suitable trail surfaces although both need to be maintained to provide quality accessible experiences and access. Variable width trails from 5' wide to 12' wide would provide a full range of trail experience types. A 5'-wide natural surface trail would provide the adaptive equivalent of a narrow hiking trail, like those found on the Refuge's west side. A 12'-wide trail would allow people using wheelchairs or scooters to stroll abreast and enjoy the natural environment in a social context. Pullout areas along the trail provide opportunities for people with physical disabilities to rest, and benches should be provided in these places. In areas with significant drop offs or ditches next to the trail, raised edges or railings will provide additional safety.

In all cases, providing descriptive signage at trailheads and access points will allow people with special mobility needs to make informed decisions about their ability to use the trail. This information element, more so than any design element, will make trails most accessible to people with physical disabilities.

Pushing Strollers

Target audiences in this category have high concern for safety and decided interest in smooth surfacing. Trails of asphalt or concrete that provide space for trail users to walk or run abreast provide the best options for this audience. Ten-foot wide trails would be most satisfactory for people pushing strollers; however, some variation in trail width between 8 and 12 feet could allow for a more interesting, engaging, and varied experience while providing some flexibility to site a wider trail on the landscape. Particularly if strollers would be mixed with people riding bicycles, a wider trail provides flexibility for bicyclists and runners to pass safely. Nature play areas would be desired spaces on stroller trails, providing physical activity and discovery opportunities for children in the strollers. Trails that include interpretation and that lead to destinations would provide observation and education opportunities.

Conclusion

With the extensive public outreach conducted for trails planning on the Refuge, a solid understanding exists of target audience trail preferences for surfacing, width, and separation from motor vehicles. In addition to these basic design elements, target audiences expressed interest in trails with slow design speeds, opportunities to engage Refuge resources, space on trails for social experiences, and attention to the Refuge's uniqueness and ecological setting.

Outreach participants represent an array of perspectives from Lawton and communities surrounding the Refuge. Input on accessible facilities comes from mobility advocates located in Portland, Oregon. Findings, consequently, can be applied as guidance for trails that develop in the region for the target audiences. Application of these findings may not apply optimally to urban trails because participants, who represent non-specialized recreationalists, were asked to identify their preferences for trails in a place like the Refuge. Specialized recreationalists, also, may present different needs for trail design.

Appendix A: Like-storm input sheet






The attached input sheet was modified slightly for different audiences, but remained essentially the same in its structure and instructions for all audiences.

Like-storming, design options for Refuge east side trails

Lawton Area Girl Scouts Leaders

November 6, 2012

We're interested in where your likes (👍) are. Put a LARGE DOT in the 👍 column for the surfacing, width, and separation you would most like to see for each activity (listed across the top -- biking, walking, running, wheel chairing, and pushing strollers). If the activity does not apply to you, leave that column blank. Please write any comments about the trails or the design options on this sheet.

ACTIVITIES	BIKING 	WALKING 	RUNNING 	WHEEL CHAIRING MOBILITY AIDS 	PUSHING STROLLERS 
DESIGN OPTIONS					
Trail Surfacing					
Natural Surface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asphalt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trail Widths					
6 feet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 feet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 feet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 feet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shared Road Use & Separation					
Shared Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharrows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shoulders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attached Path	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attached Path with Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Separated Path	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>