

Chapter 12

Trails

The section on trails is divided into two chapters. This chapter focuses on the planning process and philosophy. The next chapter focuses on trail construction techniques. First, this chapter examines some philosophical considerations regarding building trails. Trails connect people with experiences. Building a trail involves a responsibility that it can be maintained and that the environmental integrity is being protected. Also, echoing Leopold's famous quote, people need to be educated for their experience. It is more than just physically building trails. Next, the chapter reviews some national legislation affecting trails. Last, this chapter focuses on the planning process and on the process of building new trails. Topics include philosophical considerations, legislative and legal underpinnings, planning, specialized trails and types of trails.

Philosophical Considerations

"Trails are the pathways to people's experiences." – rbk

Trails connect people to the experience and they can provide the experience themselves. One of the most important results of building a trail is that it creates access. Normally, it is axiomatic that if you build a trail you increase access and more people will come. If you improve or upgrade the trail, even more people will come. Normally, for most recreation and parks people, this is viewed as desirable and is considered good in terms of providing recreation experiences for people. Increasing access and use of an area, can lead to undesirable impacts such as overuse and habitat degradation.

However, the converse is also true. If a planner wants to limit use, limit access, or protect the resource, don't build the trail (see items listed below). If a trail exists, don't improve it, and don't advertise it on the website. There are benefits to not facilitating access. Building a trail or upgrading it requires maintenance to maintain the trail and this can stretch already limited budgets. It can protect a fragile resource. Discussed in Chapter 10 on carrying capacity, the Devil's Hopyard trail in the White Mountains is protected because few people know about the trail, it is off the beaten path, and its location is not advertised either. It could be argued that even mentioning it here is doing a disservice to the trail since it increases the knowledge of the trail, and this could facilitate increased use of the trail.

Reflecting this counter opinion are several suggestions listed below. They are mostly written in the negative because they are a counter point of view.

- *"Build a trail and they will come. Improve it and more will come. If you don't want people to access an area, don't build a trail into the area."* – rbk
- *Don't build the trail.* As the previous quote implies, if you build it, they will come. If you can't support the maintenance on the trail, if you are protecting habitat or endangered species, not building the trail will help protect these resources.
- *Don't improve the trail.* Again, fewer people will come. Unfortunately, if they do come there will be pressure to improve the trail.

- *Remove the trail.* Removing the trail removes access. A creative use of this principle is "naturalizing" the entrance to the trail so that users walk or ride past where the trail once was (see Figure 13.26 for a discussion of trail removal).
- *Don't label the endangered species.* The sign which states "Endangered Species, Don't pick the flowers" only encourages users to pick the flowers and ask the ranger if this is an endangered flower.
- *Don't label it on the map.* Again, out of sight, out of mind. Keep it out of Rand McNally and off the website.
- *Don't mention it in the guide book.* Again, out of sight, out of mind.
- *Give the destination or trail an undesirable name.* Who wants to go to Mud Lake or Dismal Swamp? Who wants to go on the Poison Ivy Trail or the Old Dump Trail?
- *Don't advertise the trail.* If people don't know there is a trail, they won't use it. This is good "information management." What you don't tell people is just as important as what you tell them. Naming destinations or map locations, guidebooks are examples of information management. The ranger at the information booth is also an important manager of information in making recommendations of where people should visit and not visit. Proper information management can reduce search and rescue costs and maintenance costs.

Not providing access or limiting it can be consistent with the management goals for the resource. It can facilitate habitat protection for animal species that require large areas of remote wilderness to survive. It can be consistent with the management goals for the resource where improving a trail and increasing use can be inconsistent with the management of the area. In addition, increasing use puts pressure on further improvements which facilitates additional use. This process is described as the "flume effect" in Chapter 10 on carrying capacity.

In the White Mountains of New Hampshire, the Kancamagus Highway connects Conway, New Hampshire with Woodstock and Lincoln (see also Figure 7.23). It bisects a significant portion of the White Mountains. It started as a dirt logging road. The road was impassable during winter and closed. Over time the road was improved, paved, and it is now a major scenic thoroughfare traversing the White Mountains (Figure 12.1). Again,



Figure 12.1: Kancamagus Highway – Originally an old logging road, the Kancamagus Highway gradually was improved until it became a major road traversing the White Mountains from Conway to Lincoln, New Hampshire. Taken in the 1970s, the Lower Falls along the highway became a popular stop including buses. Today, it is a scenic highway and busy thoroughfare. The site has been upgrade to handle additional cars and people. Near Conway, New Hampshire. Source: author – [file:\hdt-KA70s-001.pdf]

it is an example of the “Kachees effect” discussed in Chapter 10. In terms of Pinchot’s maximum of the “greatest good to the greatest number,” (Nash, 1970, p87) it could be argued that improving the resource has resulted in a greater benefit for more people. The opposite could also be argued. Regardless, in terms of access, improving the resource and increasing access, facilitates increase use.

A second example is the Dumoine River in Quebec. It is a scenic river that was only accessible by airplane. Gradually, the logging roads have been improved. Now the river is accessible by four wheel drive vehicles and as the roads are continually improved, more vehicles will be able to drive the road and more people will be able to access the river. In turn, there will be more impacts to the resource and a greater need to improve the resource. Like the Kancamagus Highway, the Dumoine is gradually being transformed. Making the issue even more complex, search and rescue and emergency access is always a justification for providing improving access to an area.

Perhaps Aldo Leopold eloquently addressed the issue of providing access in his discussion of the land ethic in *A Sand County Almanac*. Building roads and trails is more than simply constructing roads and trails. Building trails has many unintentional consequences. In weighing the effects of these impacts, it is “qualitative bankruptcy” if the outdoor resource is consumed without building “receptivity into the still unlovely human mind.” Building the trail is more than simply building a trail and providing access. The purpose of building a trail is also one of creating an experience that educates people about that outdoor resource or provides some larger purpose. To not do so will lead to the degradation of the resource without deriving benefit from the experience or “qualitative bankruptcy.”

It is the expansion of transport [roads and trails] without a corresponding growth of perception that threatens us with qualitative bankruptcy of the recreational process. Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind. (Leopold, 1949/1965)

Legislative and Legal Basis for Trails

On the national level, the National Trails and the Wild and Scenic Rivers Acts have had a significant impact on trail development. In addition, the states have used this legislation as models for implementing state programs.

National Trails Act of 1968

– The National Trails System Act, P.L. 90-543, became law October 2, 1968 (Johnson, 2015). The Act and its subsequent amendments authorized a national system of trails and defined four categories of national trails. The two most notable trails are Appalachian in the east and Pacific Crest National Scenic Trails in the west. The System has grown to include 20 national trails. Currently, there are no National Recreation Trails listed in the system. As with similar legislation, the Act became a prototype for similar legislation by the states.

The Act created the National Trails System (NTS) and immediately placed the Appalachian and Pacific Crest Trail within the System. Currently, only these two national trails are receiving funding. Also, the NTS created four trail classifications.

- **National Scenic Trails (NST)** – A National Scenic Trail has the following attributes. It provides outdoor recreation, conservation, and the enjoyment of scenic, historic, natural, or cultural qualities. Both the Appalachian (AT) and the Pacific Crest Trails are national scenic trails.

- **National Historic Trails (NHT)** – A National Historic Trail follows travel routes that have historic significance. The Lewis and Clark National Historic Trail is a 3,700 mile trail that follows the path of the Lewis and Clark expedition.
- **National Recreation Trails (NRT)** – National Recreation Trails are existing trails in or reasonably accessible to urban areas, recognized by the federal government as contributing to the Trails System. They are managed by either public and private agencies at the local, state and national levels. NRTs provide recreation opportunities for the handicapped, hikers, bicyclists, cross country skiers, and horseback riders.
- **Connecting or Side Trails** – Connecting and side trails connect with or provide access to any of three above types of trails in the system.

Wild and Scenic River Act of 1968 – The Wild and Scenic River Act, P.L. 90-542 was passed and signed into law on October 2, 1968. It was a recommendation and outgrowth of the Outdoor Recreation Resources Review Commission (ORRRC). Typical of this type of legislation, its purpose was “to protect outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations” (Wild and Scenic River Act, 1968, Section b). The emphasis of the act was on free-flowing rivers. The legislation has three river classifications (Figure 12.2).

- **Wild River Areas** – Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic River Areas** – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational River Areas** – those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

As is often done, the Act became model legislation for the states. Even though the states modified and adapted the legislation to their needs, the basic structure of the national legislation remained intact. The Commonwealth of Pennsylvania passed legislation to create its scenic river program in May 1982. The Commonwealth legislation had five categories: Wild, Scenic, Pastoral, Recreational and Modified



Figure 12.2: Early Morning on the Middle Fork – Part of the Frank Church River of No Return Wilderness, the Middle Fork of Salmon was designated as a “Wild River” by Congress in the original Wild and Scenic River Act of 1968. The rafts are tied up, ready for another day of travel on the river. Middle Fork of the Salmon, Idaho. Source: author – [file:\DSC_0158.jpg]

Recreational Rivers. Their legislation added two categories, Pastoral and Modified Recreation Rivers to the standard classification system. A significant difference from the national legislation is allowing the inclusion of small dams and impoundments under the Modified Recreational River category.

Although the Wild and Scenic River System has tended to be associated more with free-flowing rivers, dam removal, and environmental concern, the rivers in the system have become a recreational Mecca for boater, outfitters and shore-based activities. American Rivers, an association that has championed the Wild and Scenic River Program notes on its website the environmental aspects of the Act in describing what the Act does.

Planning Process

Three aspects of the planning process are discussed in this section. The first are the resource needs of the recreational activities. Each recreational activity has preferences in terms of what is needed as a suitable resource needed to conduct the activity. The second is an outline of the process used to complete the design and construction of a trail. It provides a useful checklist of tasks that need to be performed. The last are ten tips for building water trails that equally applicable to land-based trails.

Recreational Activity and Trail Specifications – Different recreational activities have different parameters that need to be met in order to effectively conduct the activity. Figure 12.3 provides a summary table of several of these criteria for four recreational activities. Although there is considerable overlap in design criteria, it is arguable that given the opportunity, designers will design separate trails to accommodate different user groups. Also, the specifications can be used to discourage use. For example, surfacing can be used to favor or disfavor an activity. Asphalt favors the use of bicycles. Pea gravel discourages bicycles, except perhaps mountain bikes.

Figure 12.3 – Trails, Information Management and Protecting the Treasures – Caption: Not building a trail and good information management may be important in protecting valuable resources. – Source: Ryan, K., (ed) (1993) – [file:\fig1203-hdt-TrailsInfoMgmtTreasures.pdf]

Perhaps, the most critical factors for separating use include users traveling at significantly different speeds or having significantly different sizes or mass (e.g. equestrian, automobile versus pedestrian). For example, the backpacker using the Auto Road descending Mount Washington in the White Mountains is traveling a different speed from the automobiles. In addition, the automobiles are a significantly larger mass than the hiker. Not only does this situation pose a potential safety hazard, but the hiker is most likely having a diminished experience hoping not to get run over by the descending automobiles (Figure 12.4).



Figure 12.4 – Backpacker on Auto Road – Caption: This backpacker is hiking on the auto road descending Mt. Washington. It is a safety hazard for both the automobile and backpacker. Also, the conflict results in a lesser experience for both parties. Mt. Washington Auto Road, New Hampshire. – Source: Author [file:\fig1203-AutoRoad-FW802.JPG]

Figure 12.3 Table 1. Recommended Trail Specifications

TRAIL FEATURE	PEDESTRIAN	BICYCLE	EQUESTRIAN	CROSS-COUNTRY SKI
Single Tread Width		8 foot absolute min 10 recommended	5 feet	4 feet
Double Tread Width		12 with other uses		7 feet
Shoulder Clearance	2 ft each side; 5 ft preferred	2-5 feet		2 feet minimum each side
Vertical Height	7 feet	8 feet; 10 feet for overpasses and underpasses	10 feet	7 feet above average snow height
Average Speed of Travel	3 to 7 mph	8 to 20 mph	4 to 8 mph	2 to 8 mph
Longitudinal Slope of Roadway	no restrictions	3% preferred; 8% maximum	10% maximum	3% preferred; 5% maximum
Cross Slope of Roadway	4% maximum	2% to 4%	4% maximum	2% preferred
Acceptable/Preferred Surfacing	Softer than asphalt: crushed stone, wood chips, bare earth	paved surfaces preferred; crushed stone acceptable	granular stone or dirt	most surfaces; 6 inches snow recommended

Source: Karen-Lee Ryan (ed) Trails for the Twenty First Century. Washington, DC: Island Press, 1993,

Olmsted knew this principle when he designed separate trails for different user groups in Central Park. Single use trails are preferred. At Venice Beach in California, the trail in the foreground is supposedly restricted to bicyclists only and has painted warnings on the pavement “bicycles only” (Figure 12.5). It is designed to discourage pedestrians. Pedestrians have use of the large promenade in the background lined with vendors. Also, because this path is more serendipitous and longer in length than the promenade next to it, it discourages pedestrians. The promenade is shorter and requires less walking. Regardless, pedestrians occasionally use the trail.



Figure 12.5: Venice Beach Special Use Trail – A “Bicycles only” sign painted on the pavement in the foreground indicates a special use trail. Reducing conflicts, both roller bladers and bicyclists travel at somewhat similar speeds. Pedestrians have the use of the promenade lined with vendors in the background. Venice Beach, California. – Source: Author – [file:\Venice236[gd].jpg]

Rules can be used to reinforce the single use policy (Figure 12.6). However, shared use trails are often a necessity of sharing a limited resource. As the trail at Venice Beach in California extends into the less populated area, the trail accommodates all recreational uses including pedestrians, skateboards, roller blades, and bicycles. Generally, it works because there is less traffic and everyone is traveling at a similar rate of speed and the relative size of mass of the travelers are relatively the same.

Speed of travel is also an important consideration in designing and constructing trails to accommodate different user groups. A significant differential in speed of travel can often lead to potential conflicts between users. A pedestrian walking on a trail at two miles per hour will be surprised by a bicyclist speeding by at 20 miles per hour. Conceptually, it is no different than a motorist traveling at sixty miles per hour suddenly being passed by another motorist traveling 90 miles per hour. The suddenness of the approaching vehicle creates an unnerving experience. It is not that the bicyclist seeks to unnerve the pedestrian. It is the difference in speed of travel that creates surprise and disorientation. The same situation exists for coastal kayakers who are passed by motor boats going three or four times the speed of the kayaker. In addition, the kayaker has the motorboat’s wake with which to deal also.

In Figure 12.5, there will most likely be little conflict between the roller blader and bicyclists since they are usually traveling at somewhat similar speeds. In addition, the designer of this trail designed this portion of trail in a zig-zag or more serendipitous manner. It accomplishes two objectives. First, it slows down the bikers and roller bladers who have to go around the bends. It is clear in the photo that the biker is rounding the bend. Second, it discourages pedestrian traffic. The zig-zagging makes for a longer walk.



Figure 12.6 – Restricted Trail Area – Caption: Most user groups prefer a trail restricted to only their use. Policy complements trail design specifications as a method of limiting use. Lake Artemesia, Berwyn Heights, Maryland – Source: author [file:\fig1204-Artemesia147.pdf]

Figure 12.3 provides the average speed for four user groups. The average speed for bicyclists of 8 to 20 mph is easily two to three times the average speed of pedestrians. Differences in size and when the activity occurs also tends to sort user groups into non-conflicting situations. Although equestrians travel at relatively the same speed as pedestrian, the size difference for many people will make a difference. Most pedestrians and equestrians will not be traveling on trails groomed for cross-country skiing reducing the likelihood of a conflict between these user groups. However, the speed of travel between the cross-country skiers and snowmobilers can easily lead to a conflict.

A summary table of trail specifications for four land based recreational activities is provided in Figure 12.3. The table covers clearances (e.g. tread width, vertical height), speed of travel, and surfacing materials) for walking, biking, equestrian, and skiing. The table does not consider water related activities. Generally, a coastal kayak can travel between 5-6 mph and a canoe will travel between 2-4 mph. Speed of travel can be important in spacing the locations of campsites and other support services along the trail.

Planning Process Outline – Trail design and construction can be a lengthy process. In Karen-Lee Ryan (editor) book *Trails for the Twenty First Century*, she focuses on the planning process in the first three chapters. The outline in Figure 12.7 is derived from the topical outline of these chapters. Although it is generally written from the perspective of converting rails-to-trails, it provides a checklist of items that will most likely need to be addressed as part of the process. Examination of the outline reveals that the planning process is similar to Rutledge’s (1986) model and the general planning process presented in chapter on site planning process presented in Chapter 18. The steps can be modified as needed.

Figure 12.7 – Planning Process – Caption: This table is the topical outline for chapter 1-3 in Ryan’s (1993) book. – Source: Ryan, K., (1993, ch 1-3) [file:fig1207-hdt-PlanningProcessTrails.pdf]

The first step is to inventory and assess the site. It is important to assess the current state of the trail resource. This will help to determine the extent of what needs to be done to refurbish the trail and it helps in establishing the priority of the items to be refurbished. Also, the budget will emanate from the tasks identified.

Next, the trail needs to be examined in the context of its environment or community. Essentially, this helps to determine who will use the trail. In addition, it will help to determine support for the trail within the community. Procedurally, this includes the permits and licences that need to be obtained as part of the process.

Specialized Trails

Every activity has specialized trail and resource needs. ATVs, mountain bikes, hikers, kayakers, 4-wheelers, each has specialized trail needs. Readers should consult each of the specialized areas for their specialized needs. Three areas are introduced here. The first is hiking and backpacking. It is the underlying content area of this and the next chapter. The second is the highly successful rails-to-trails and the third is the easily overlooked water trails. The last section emphasizes the need of the resource in performing any specialized activity and without it, the activity becomes severely limited.

Rails to Trails – In the 1960s and 1970s two significant trends converged to create rails-to-trails. The first was a change in the transportation system. Railroads had over built and were abandoning lines that were no longer needed. The second trend was a public turning toward the outdoors and specifically to the human powered outdoor activities (Kauffman, 1990). The abandoned right-of-ways with bridges and

Figure 12.7 **Typical Planning Process for Trail Development**

The following outline provides a general outline or checklist of things that a group needs to do in order to effectively create a trail. Readers will note that the planning process is similar to Rutledge's model presented earlier in this document. The source of this outline is from chapters 1-3 in Karen-Lee Ryan (ed) *Trails for the Twenty First Century*. Washington, DC: Island Press, 1993.

A. CONDUCT A PHYSICAL INVENTORY AND ASSESSMENT OF THE SITE.

1. Assess the Natural Features in the Corridor

- *Assess and inventory the existing vegetation*
- *Assess the surrounding topography.*
- *Inventory the impact of adjacent streams on proper drainage.*
- *Determine significant natural features like overlooks, ponds, wetlands, etc.*

2. Inventory Cultural or Built Features Along the Trail

- *Existing Bridges*
- *Tunnels*
- *Canals*
- *Buildings*
- *Historic preservation*
- *Other related structures and facilities*

3. Inventory Existing Infrastructure Present

- *Utilities*

4. Inventory Animal Life within the Corridor

- *Domesticated animals or livestock*
- *Inventory wildlife*
- *Endangered or rare species*

5. Composition of the Corridor

- *Composition of roadway and subsurface.*
- *Determine cross-sectional profiles of the corridor.*
- *Determine longitudinal slope of the path of travel.*

6. Spatial Values of the Trail Corridor Landscape

- *Determine viewsheds*

7. Determine the Effect of Intersections

- *Intersections with roadways*
- *Intersections with canals and active railroad*
- *Other trail corridors*

8. Determine Potential Access Points along the Trail Corridor

B. CONDUCT A CULTURAL ASSESSMENT OF THE SURROUNDING COMMUNITIES.

1. Determine the Community Character

- *Conduct a socioeconomic profile of the community*
- *Assess early on community fears and aspirations.*

2. Determine Recreational Needs

- *Determine market demand using SCORP, planning documents, etc.*
- *Package the product (trail) for selling to the public.*

3. Historical Considerations

- *Determine the local history of the corridor*

- *Contact state historic preservation agencies regarding resources*
- *Check for archeological significance*

4. Economic Development Factors

- *Determine potential commuter use*
- *Determine how the trail fits into the transportation network.*
- *Assess motorized versus non-motorized use*

C. ELICITING PUBLIC INVOLVEMENT

1. Conduct Meetings and Hearings

- *Conduct a community design workshop*
- *Conduct public meetings and workshops to identify issues*
- *Meet with people who will impact the development of the trail*
- *Public hearings*
- *Create a citizen advisory committee*

2. Media Involvement

- *Conduct user and citizen surveys*
- *Conduct a media outreach program utilizing articles, etc.*

3. Meet the Needs and Fears of Adjacent Landowners

- *Address crime, property values and liability*
- *Individual meetings with landowners*
- *Give them trail tours*
- *Give them tours of similar trails that are successful*
- *Negotiate and mitigate*

D. PERMITS AND LICENSES

1. Obtain the Appropriate Permits

- *Land use permits*
- *Shoring and excavation permits*
- *Drainage permits*
- *Foundation permits*
- *Building permits*
- *Electrical permits*
- *Mechanical permits*
- *Street-use permits*
- *Demolition permits*
- *Structural permits*
- *Sign permits*
- *Fire-code inspection*
- *Plumbing permit*
- *Water permit*
- *Water-quality certification*
- *Floodplain compliance permit*

other structures were available to create an extensive network of linear trails.

As part of the movement, the Rails-to-Trails Conservancy (RTC) was formed in 1986 to promote the conversion of abandon right-of-ways to trails for bikers, hikers and other adventure sports. Since then over 21,000 miles of trails have been created serving millions of recreationists. The conservancy is a grass roots organization that works closely with local groups to create rails-to-trails.

Often these trails are mistakenly sold to local communities as regional resources that will attract tourism dollars into the community. Although this is true, most of the trail use is typically by local residents located in close proximity to the trail. It is a variation of NIMBY (Not In My Back Yard) where the local community wants to know what recreational services are being provided for them, not some tourist.



Figure 12.8: GAP Trail – The Greater Allegheny Passage Trail is a converted Western Maryland rails-to-trails. Marketed as a trail for through travelers, most of its use is by local citizens. Also, showing that different uses can share the same right-of-way, the trail shares the right-of-way along this stretch with a scenic steam railroad. Cumberland, Maryland. Source: author – [file:\GAP002trail002.jpg]

The Greater Allegheny Passage (GAP) trail is a converted Western Maryland Railroad right-of-way from Cumberland, Maryland to Pittsburgh, Pennsylvania (Figure 12.8). It connects with the C&O Towpath Trail at Cumberland to create a combined through trail from Washington to Pittsburgh. For the local residents of Cumberland, it was an issue of what does this trail provide for them. User surveys indicated that over 70% of the trail's use was by the local community. This isn't counting the economic effects of the B&B and other local services generated by the trail. Eventually, local newspaper articles slowly indicated this usage and over time the local community has come to appreciate the GAP trail that was marketed for everyone else, but really was for them.

Water Trails – In discussing trails, it is easy to overlook water trails. Traditionally, the discussion of trails implicitly focuses on land-based trails. With the settling of the country, rivers and lakes were the roadways to the west. They remain key trails for recreational users today. Compared with land-based trails, water trails have fewer environmental impacts than their land-based counterparts. Their major impacts occur at the put-in, take-out and campsites if utilized in route.

Some better known water trails include the Maine Island Water Trail, the Florida Everglades and the Minnesota Boundary Waters. However, there are over 12,000 miles of coastline and 88,000 miles including tidal waters for exploration. (Source: Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service.) Most tidal waters are close to large populations centers (Figure 12.9).

Between 1988 and 1990, this author served on the National Trails Task Force which was charged with developing a national agenda for trails. The task force was a cooperative venture between the National Park Service and the American Trails Network. My role was to represent the American Canoe Association. As a contributing member of the task force, my input was primarily two-fold. First, it was to remind the other task force members that “Water trails are trails too.” Second, it was to suggest in the final document to insert “land and water trails” where the document simply read “trails.” It was a necessary task since people typically think of trails as land based and overlook water based trails.



Figure 12.9: Water Trails – The Lehigh Gorge is a designated scenic river in the Commonwealth of Pennsylvania’s scenic river program. Also, it is a popular water trail serviced by outfitters who raft the river on a regular basis. Near White Haven, Pennsylvania. Source: author – [file:\lehigh0016.jpg]

Figure 12.10 presents ten tips for developing water trails. It can easily apply to land-based trails also. It complements the Ryan (1993) planning outline and presents several new ideas. One tip suggests to inventory the resource in terms of its cultural, natural, and interpretive features and to partner with other agencies and organizations. Even *through trails* are local trails to the property owners along the trail and to the communities through which they pass. In a real sense, all trails are local trails and the support of local communities is important for their long-term success. In addition, the tips address many of the points in this chapter such as designing the trail to minimize conflicts between user groups and to remember that “nature is the draw” and to design the trail to deliver an experience.

Figure 12.10 – Ten Tips for Developing Water Trails – Caption: Ten tips for developing water trails and other trails also. – Source: Settina and Kauffman (2001) [file:\fig1210-hdt-WaterTrailsTips.pdf]

Limit the Resource, Limit the Activity – Limiting the activity by limiting the resource available is a variation of the Designing the Experience model presented in the Introduction and which formed the foundation for this textbook (see Figure 0.1). The model brings together the park resource, facilities, and activities to create an experience for people. Traditionally, there emphasis has been on providing more park resources and facilities to create more experiences.

Hence, the resource becomes the limiting factor in the growth and development of a recreational activity. Surfing needs ocean waves. Climbing needs rock faces. Whitewater needs rapids with stabilized water flows for summer low flows. Equestrians need equestrian trails. Hikers need Appalachian Trails. Without adequate resources, the activity becomes severely limited in its ability to be conducted.

Technology has addressed some of these resource needs and in doing so, changed the nature of the activity. Wave pools have aided surfing, Indoor climbing walls have transformed the sport of climbing. Artificial whitewater courses may do for whitewater what indoor climbing walls have done for climbing.

Figure 12.10 **Ten Tips for Developing Water Trails¹**

1. **Match the experience sought with the experience provided** – Inexperienced paddlers need the most care. Quality support services provided by an outfitter, a comprehensive trail guide and, in some cases, a well-marked trail can help in creating a safe and enjoyable experience.
2. **Identify potential partners and get them involved** – Enhance visitor services and off-set trail maintenance costs through the help of partners. Private guides and outfitters can provide boats, equipment and other services, functions that are often impractical for the state to operate. County tourism offices may aid in marketing and a local canoe club can assist in maintaining a trail. Providing opportunities for partnerships enhances the water trail and promotes public support.
3. **Develop a high quality map and trail guide** – A high quality map and trail guide, which addresses everything needed for the trip, is just what the water trail boater needs. Think of it as a one-stop center for important information. Make it waterproof and tear-resistant. Don't hesitate to sell it either to ensure future printings of the map.
4. **Incorporate Leave No Trace ethics (LNT)** – Information and training about Leave No Trace ethics are now available through a national organization, LNT, Inc. (www.lnt.org). Education and outreach to visitors about these low-impact recreation strategies are an effective investment to reducing ecological and social impacts of a water trail.
5. **Canoe and kayak the proposed trail** – Maps don't show everything. Interpretive features, travel times, user conflicts, unique habitats in need of protection, and unforeseen problems are often found when scouting the trail.
6. **Nature is the draw** – Aldo Leopold wrote: *“Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind.”* Keep manmade distractions to a minimum. Think of ways to increase the boater's appreciation and understanding of the resource.
7. **Be realistic about available resources** – Design the trail so that maintenance and visitor services are consistent with available resources. Developing partnerships may help solve the problem.
8. **Design the trail to minimize conflicts with different user groups** – Recognize and understand the varying needs of the boaters using a water trail and minimize conflicts through design, education and outreach.
9. **Monitor ecological and social impacts** – The long-term success of a water trail depends on maintaining the integrity of natural and heritage resources, as well as the quality of the human experience. Employ strategies to measure resource changes and visitor satisfaction over time. Adapt management strategies to prevent problems.
10. **Involve a wide array of staff and public interests** – Don't try to plan a water trail in a vacuum. Involve the widest array of stakeholders, both internal and external to the agency, in the planning process. The end result will be a better water trail and public support.

Returning to the national legislation passed. The hiking and backpacking interests have considerable political clout to get Congress to pass the National Trails Act. However, viewed differently, it only provided funding for two national trails. And the Appalachian Trail has less than 2,000 through hikers completing the trail each year. If these are the only resources available, hiking and backpacking would be severely limited. Fortunately, there are numerous hiking and backpacking trails supported by local, non-profit, and state agencies. It is axiomatic that if more basketball is wanted; build more basketball courts. If more swimming is wanted; build more swimming pools. If more hiking and backpacking are wanted; build more trail systems. Obtaining adequate park resources is a necessary component for designing the outdoor experiences.

Types of Trails

Essentially, it could be argued that all trails are linear trails and it is only a matter of how the trails are connected with each other that distinguishes their differences. (Figure 12.11). A loop trail is merely a linear trail where the end connects to the beginning. Also, trails can be classified by their function (e.g. service trail) or because it describes features found along the trail (e.g. Bear Lake trail is the trail to Bear Lake). Five classifications are presented. These are linear, loop, stacked loop, satellite (Figure 12.11) and systems approach.

Linear - The end of a linear trail is at different location than the beginning of the trail. Logically, it can be argued that all trails are linear trails. A loop trail is really a linear trail where the end is located at the beginning and a spur trail is a linear trail which simply ends. Normally, the trail is linear but it can involve interesting variations such as Wright's planetarium which is spiral trail or roadway (see Figure 13.4).

Linear trails are a very common type of trail. Examples include Skyline Drive in Shennadoah National Park (Figure 12.12), scenic rivers and water trails, rails to trails, AT and Pacific Crest Trail, and even the Atlantic Reef at the National Aquarium. These are all examples used in this and in other chapters.

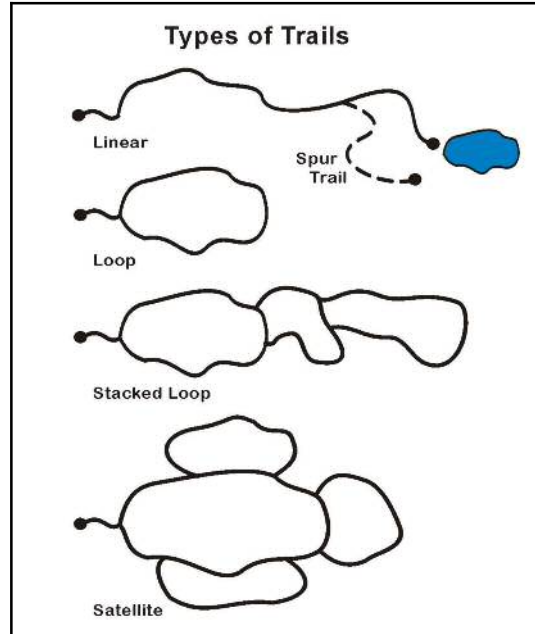


Figure 12.7 – Types of Trails – Caption: Presents several linear and loop type trails. – Source: author [file:\fig1207-Trail10.pdf]



Figure 12.12: Shennadoah Parkway – The ridge line parkway provides a scenic view of the Shennadoah valley below. It is a linear trail that is also a linear park. In addition, with the numerous access points, the seemingly linear park could be analyzed using the systems approach. Shennadoah National Park, Virginia. Source: Author – [file:\SHEN016.JPG]

Spur (destination) – It is a linear trail which comes to an end or reaches a destination where the trail goes no further. Usually the destination is a scenic overlook or facility being serviced. Normally, a spur trail requires the user to backtrack over the same trail to exit the destination. This is known as a “dogleg.” A dogleg is simply having to double back or return on the same trail. Doglegs double the impact to the resource and increases traffic with people passing each other from the return trip. At the end of the Devil’s Hopyard trail discussed in Chapter 10 on carrying capacity is a “Dead End” sign. People need to return the same way they came, doubling the impact to the fragile resource (Figure 12.13).



Figure 12.13: Dead End – When people reach the end of the Devil’s Hopyard trail, they are greeted with a “dead end” sign. It is a “dogleg” and they need to return by the same trail. This doubles the environmental impact on this fragile trail. White Mountains, New Hampshire. Source: author – [file:\FW620-Hopyard.jpg]

Loop – A loop trail is a linear trail where the end of the trail is at the beginning. It is also a common type of trail. The obvious advantage of a loop trail is that the trip ends where the car is parked. Variations of the loop trail include the “stacked loop” and satellite trails discussed in the next section. Also, a loop trail can be constructed by connecting together several links using the systems approach.

Often interpretive trails use a loop format since it is convenient to end at the beginning close to the parking lot. The Owl Trail was a sensory awareness rope trail where blindfold participants experience objects along the trail (Figure 12.14). It provides an example of an interpretive loop trail.

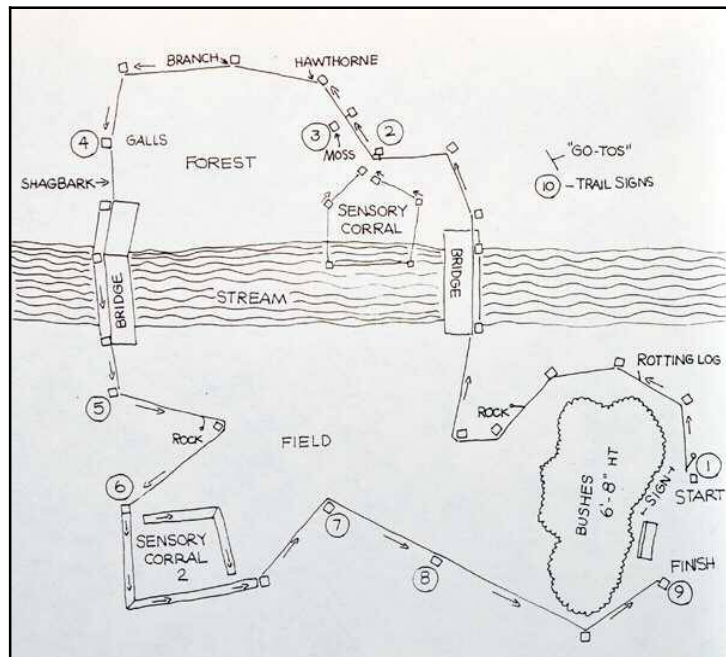
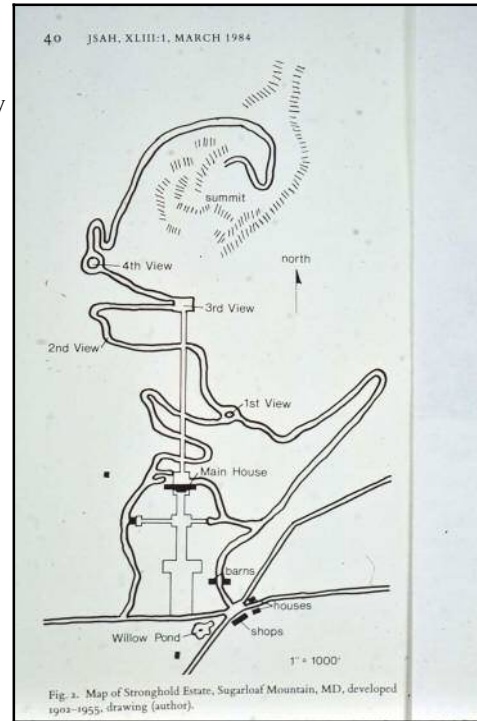


Figure 12.14: Owl Trail – An interpretive rope trail, the Owl Trail is a loop trail that returns its users to the place where they started. The bushes at the entrance provide a visual barrier for the users to prevent them seeing the trail before they become blindfolded. Source: Kauffman (1979, p.45) – [file:\OwlTrail001.jpg]

Stacked Loop and Satellite – The stacked loop and satellite trail systems are variations of the loop trail (Figure 12.11). An example of a stacked loop

trail is the road system designed for Stronghold located on Sugarloaf Mountain in Maryland (Figure 12.15 and Figure 8.23). As a footnote, Wright’s planetarium was proposed at the end of the spur road on the summit (see Figure 8.25 and see Figure 13.4). Actually, for the public the traffic flow is that of a single loop. The loop to the house is closed off to the public. Traffic enters at the gate on the right. The road is one way until the spur route to the summit. Cars return down the spur route and when they meet

Figure 12.15: Sugarloaf Road System – A private preserve open to the public, Stronghold provides a series of private roads to the summit. Close inspection reveals that it is a double stacked loop with a spur road to the summit. Wright’s planetarium (see Figure 13.4) was a proposal not accepted by Stronghold. Source: Reinberger, (1984, p.40) – [file:\SugarLoaf006.JPG]



the outer loop, they once again proceed on a one-way road to the exit to the left of Willow Pond. Also, the spur route was not completed to the summit and people need to hike the last several hundred yards to the summit.

Systems Approach – The system approach toward trails views trails as a series of interconnected links (linear trails) that collectively creates a total system of trails (Figure 12.16). The links can be combined to create linear and loop trails. A long linear or through trail such as the Appalachian Trail, Pacific Crest, or Lewis and Clark trails can be broken down into smaller sections.

Additional Terminology – Trails can be classified using the following additional terminology. Mimicking the highway system, *primary trails* are the primary or main thoroughfares. They may be referred to as *main trails*. They are well maintained. They can be linear, loop or spur trails. *Secondary trails* are side trails and lesser used trails. *Side trails* are secondary trails that spin off of the main trail. They can include a spur trail to an overlook. *Feeder trails* are side trails that feed the primary trails. Often, they are used to connect the parking lot or trail head with the main trail.

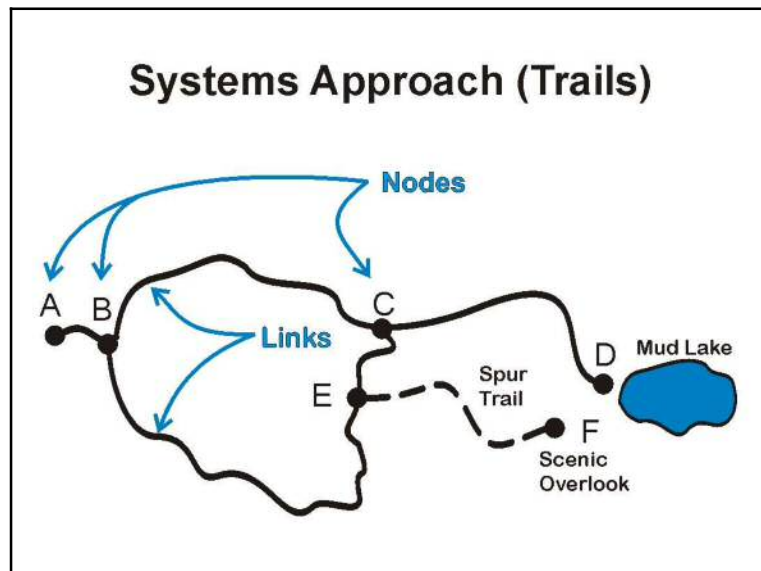


Figure 12.16: Systems Approach (Trails) – The systems approach uses connects a series of linear trails with nodes to create a trail system. Source: author – [file:\Trail11.pdf]

Summary

Trails are the pathways to people’s experiences. Trails provide the link with the experience. They provide access. Unfortunately, access and people have impacts to the resource.

To protect valuable resources, it may be just as important not to build a trail and not increase access into the backcountry. Leopold makes the point that taking people into the backcountry should have a corresponding increase in their perception. It should be educational; it should have purpose.

Legislation affects the experience delivered by trails. The National Trails and the Wild and Scenic River Acts were discussed. Initially, trails were included in one of the systems because of their uniqueness and then they are managed in accordance with the legislation to deliver the desired experience.

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