Allocating River Use:
A review of approaches and existing systems for river professionals

Prepared by…

Doug Whittaker, Ph.D. and Bo Shelby, Ph.D.
Confluence Research and Consulting

Prepared for…

River Management Society

With funding support from…

Bureau of Land Management
United States Department of Interior

July 2008

Views presented in this document do not necessarily represent any policy or position of the River Management Society (RMS), the Bureau of Land Management (BLM), or the United States Department of Interior (USDOI). The use of trade names in this publication does not constitute an official endorsement or approval by RMS, BLM, USDOI, or the authors. The authors have tried to provide accurate and complete information, but data such as names, contacts, or permitting/allocation information for specific rivers may have changed. RMS, BLM, USDOI and the authors provide no expressed or implied warranty regarding the accuracy, reliability, or completeness of furnished data. Similarly, RMS, BLM, USDOI, and the authors do not control and cannot guarantee the quality of information on referenced websites of other organizations.

Preface

Forty miles into a week-long trip we pulled into the beach and started looking for the ranger. We had signed up for a permit by phone on the long drive to the put-in, and rules required a check-in at the backcountry station to become "official" and to sign up for sometimes scarce camps. But this was early May, and we had launched in a snowstorm at 7,000 feet two days before, riding our boats like sleds down a snow drift that buried the highway guardrail. By the next morning six inches of new snow blanketed our first camp, covering Toklat the sleeping Alaskan pound-puppy so completely we thought he was lost.

We did our due diligence anyway, walking around the ranger compound for an hour before heading down river without finding anyone. This river is packed to capacity all summer long and one of the hardest-to-get permits in the country, a 30-to-1 long shot in a lottery held in January. But with snow on the ground, we had the place to ourselves.

River allocation – deciding "who gets to go" – has been part of our personal and professional lives for decades. We were river runners before we became researchers, and allocation was on the agenda for our first natural resources projects (Grand Canyon in the 1970s for Shelby, and Hells Canyon in the 1980s for Whittaker). But when we started considering ***this*** project it was a classic "approach-avoidance" dilemma – a worthy topic with lots of interesting work to be done yet, but a mine field of potentially explosive issues, some recently stirred up but others dormant for years. What were we thinking?

Whenever allocation comes up, a common question is, "What are they doing on river X, Y or Z?" The answer may be out there somewhere, but you need to know the right people to ask, hope they haven't retired or moved on to other jobs, and get lucky to find information that is comprehensive, accurate, and up-to-date. This project started as an effort to collect and organize information about river allocation systems in North America.

But what about other allocation issues? Since river allocation efforts began in the 1970s, diverse publications have been developed – some readily available, but others buried in the "fugitive" literature. Many allocation issues were adequately covered before, but others needed more work; a summary that referenced it all in one place could bring everyone "up to speed" and clarify what is known.

When it became clear we shared these goals with the River Management Society and the Bureau of Land Management, the project was off and running. We thank Richard Fichtler (BLM in Missoula, Montana) and Gary Marsh (BLM Washington DC office) for conceiving and supporting the project, as well as RMS allocation project committee members (Linda Jalbert, Tom Mottl, Caroline Tan, and Dennis Willis) for their reviews. We also thank the dozens of river managers, stakeholders, and researchers who provided information about allocation systems nationwide, or reviewed sections of the report for accuracy and clarity (see "list of sources" in the appendices).

Digging into the work confirmed our curiosity as well as our concerns about the topic; we learned yet again why allocating river use is so challenging:

- Carrying capacity and allocation are complex and contentious. When things are scarce, somebody wins and somebody loses, with a tough balancing act between "protecting resources" and "being fair to users."
- Early allocation systems were often attempts at "holding patterns," and many became artifacts of historical use. Systems were designed by a few managers at high-profile rivers, but through information-sharing these approaches spread across the country.
- For a variety of reasons, including diverse geography, history, managing agencies, types of trips, and user populations, river managers adjusted and modified their allocation systems to fit unique situations. However well-intentioned, resulting systems were often an intricate patchwork of incremental solutions.
- Such diverse and sometimes Byzantine systems are hard to characterize, classify, compare, evaluate, and (if necessary) repair.
- Many of these systems had unanticipated economic and "distributive justice" consequences.
- Stakeholders have entrenched positions, often with much to gain or lose, and they have developed strong cases for the benefits and costs of existing or alternative systems. These groups are often powerful, politically astute, and ready to flex their muscles to protect their interests.
- Although inevitable, change is difficult. Decision-making is hampered by history, inertia of "the way things are," political pressure, complexity, implementation costs, and poor information about consequences.

In spite of all this, rivers are special places that people care about passionately. The twenty or so rivers with the longest history of capacities and allocation are some of our nation's most precious resources, and people continue to flock to them. There are also about 165 Wild and Scenic Rivers (and another 3,400 potential study rivers) with a mandate to address capacities. As populations continue to grow, capacity and allocation will be on-going river management challenges.

So what lessons can be learned from three decades of allocation systems? This document collects and organizes that information, putting it in a systematic and readily-accessible form. The goal is to help resource managers and stakeholders better consider their options and the consequences of their choices, and help researchers identify the work still to be done.

Doug Whittaker and Bo Shelby
July 2008

Table of Contents

Commercial and non-commercial trips at Deer Creek in the Grand Canyon. Capacities decide "how many is too many?" while allocation decides "who gets to go?"

Chapter 1. Introduction

Public use on many North American rivers has grown substantially in the past half century. The most dramatic increases appeared in the 1970s and early 1980s, with periods of variable growth in the past two decades (Cordell et al., 1999). With the national population now exceeding 300 million (nearly double the 180 million in 1960), demand for outdoor recreation and river use is likely to remain high or increase, while the number of rivers remains finite.

On some rivers, use increases have led to crowding, conflict, and resource degradation. In response, some river managers have established carrying capacities – use limits designed to ensure that biophysical or social impacts do not exceed standards associated with resource health and experience quality. Substantial literature address impacts, standards, and carrying capacities (or other management tools) to reduce visitor impacts. A more specialized and limited literature focuses on allocation – "who gets to go?" – once capacities have been set.

Allocating use can be as controversial as the capacities that make allocating use necessary, and allocation decisions have created heated public debate, political maneuvering, and law suits. Capacities identify the limits, but allocation decisions make those limits real to individuals and groups. Agencies have the challenging task of trying to make allocation systems fair, efficient, and effective.

This report summarizes information about allocating use on North American rivers. The goal is to review allocation systems and public responses to them. The report describes the advantages and disadvantages of different choices in different settings, providing river professionals with the tools to assess and develop their allocation options.

How to use this report

This report is designed as a reference document. As with an encyclopedia, many readers will not read the entire document; but when they want information on a particular topic, it should be easy to find. The document is organized into chapters described below, with additional "sidebars" on tangential topics and appendices about specific rivers and other references.

- ***How systems work: An overview.*** Chapter 2 establishes common terminology and includes a sidebar on "preparing for allocation decision-making." Most readers will find this helpful as an introduction (for those new to the topic) or a "refresher" (for those with more background).
- ***Evaluating allocation systems.*** Chapter 3 reviews idealized and more pragmatic allocation goals. It includes a sidebar on "calculating a user scorecard" to assess how use is currently distributed.
- ***Allocation approaches.*** Chapter 4 reviews advantages and disadvantages of "split allocation" and "common pool" approaches. It includes a sidebar describing information and controversy related to the economic value of commercial allocations.
- ***Primary distribution systems.*** Chapter 5 reviews the mechanisms used to allocate use (e.g., reservations, lotteries, queuing on site, or auctions), describes how they work, and their advantages and disadvantages. It includes a sidebar on "mixing mechanisms."
- ***Secondary distribution systems.*** Chapter 6 covers systems for re-distributing use when there are cancellations or no-shows. These include call-in and web-based sign-up systems, and

mechanisms for distributing use among those unsuccessful in primary systems. A sidebar addresses philosophical issues that warn against systems that over-emphasize the "business" of permit systems.

- ***River allocation systems in North America.*** Chapter 7 summarizes a survey of river allocation systems. It describes the number of rivers that use different approaches, primary mechanisms, secondary mechanisms, etc. The summary indicates the diversity of systems that exist, and links to an appendix with additional detail for specific rivers.
- ***Case studies.*** Chapter 8 describes six specific allocation systems in greater detail (Grand Canyon, four Idaho Wild & Scenic Rivers, Colorado's Arkansas River, McNeil River, Boundary Waters, and Deschutes River) with notable innovations or challenges.
- ***Opinion about allocation systems.*** Chapter 9 summarizes user and stakeholder positions about allocation, including a survey of private boaters and interviews with regional and national organizations. It includes a sidebar on allocation research and monitoring needs.

Appendices include river-by-river information from the survey of allocation systems, and a list of websites and contacts for more information.

Chapter 2. How river allocation works: An overview

This chapter reviews concepts and defines terminology commonly used in river allocation. More extensive discussion is provided in subsequent chapters. The chapter ends with a sidebar on "preparing for allocation decision-making."

Distinguishing capacity and allocation

In recreation management contexts, many people confuse carrying capacity (use limits) with allocation. While the concepts are closely related, it is important to distinguish between them.

Carrying capacity is sometimes used as an "umbrella" concept to refer to any overuse or conflict issue, but a more focused definition recognizes capacity as "the level of use beyond which impacts exceed standards" (Shelby and Heberlein, 1986). It has its roots in range management and Hardin's (1968) "tragedy of the commons," suggesting that collective rather than individual behavior is the cause of incremental biophysical or social experience degradation (Vaske, Donnelly & Whittaker, 2000; Manning, 2007).

The general solution to these problems is to set limits – in Hardin's words, "mutual coercion, mutually agreed upon" – which requires agreement about management objectives and specific standards that define when impacts and related use levels become unacceptable. A large literature and several planning frameworks have been developed to help managers think about visitor impacts and the diversity of management actions that address them (Stankey et al., 1985, Shelby & Heberlein, 1986; Graefe et al., 1990; Manning, 2007). Capacities are a class of actions that can be particularly powerful (especially for social impacts), and at their core, they involve specific use limits. ***Allocation,*** in contrast, refers to the systems that actually distribute use once it is limited.

Allocation systems are only needed if user demand exceeds the supply of recreation opportunities defined by a capacity. Capacity determines how much use is too much, while allocation determines who gets to use the limited "spaces" defined by that capacity. An allocation system refers to the mechanisms used to distribute (or ration) those spaces. In river management, allocation nearly always refers to permit systems that ration use (usually launches, but sometimes boats, people, or "user days") during a specific time period (per day, week, month, or season).

Allocation approaches

There are three conceptual approaches to allocating river use. Brief descriptions are provided below; more extensive reviews of features, consequences, advantages, and disadvantages are provided in Chapter 4.

The most common approach is called ***split allocation*** (occasionally known as a fixed allocation)**.** It develops different systems for distributing use to the commercial (trips organized by outfitters and guides) and non-commercial (do-it-yourself or "private") sectors (see definitions below). In the commercial sector, use is allocated to individual commercial companies who generally use pricing and reservation systems to allocate space on their trips to passengers. In the non-commercial sector, use is allocated to individuals, trip leaders, or groups of users, generally through lotteries, reservations, or on-site queuing mechanisms. Under split allocation systems,

challenging issues include determining the appropriate amount of use to allocate to each sector, distributing or transferring use among outfitters within the commercial sector, and choosing allocation mechanisms within the non-commercial sector.

The ***common pool*** (also sometimes known as "freedom of choice," "no allocation," or "non-fixed allocation") approach was developed to address possible sector inequities in split allocations. It allocates all of the use to individuals or groups without distinguishing whether they intend to take a commercial or non-commercial trip (none of the use is allocated to outfitters). Applicants who receive a permit can choose to take a trip by themselves or with an outfitter. Although the concept has been around for many years, common pool systems have only been used in a few settings and consequences have not been well-documented. Challenges include choosing allocation mechanisms that are fair to commercial and non-commercial groups, and maintaining stable numbers of quality outfitters that provide services to people who don't have the ability to do it themselves without guaranteed outfitter allocations.

A third type of allocation approach has been labeled an ***adjusting split allocation***. This approach assumes an initial split system based on historical use patterns. However, going forward in time, all prospective users (commercial and non-commercial) would have to "register" their interest before competing in the separate sector allocation systems. This registration program could provide improved information about demand for commercial vs. non-commercial trips, which could then be used to adjust the proportion of use allocated to each sector. Although this approach has never been used, some rivers have modestly adjusted splits to address real or perceived inequities during plan revisions or similar planning processes. Other challenges include developing a registration program, "rules" for adjusting splits, and distributing or transferring use among outfitters within the commercial sector.

Allocation mechanisms

In addition to the ***general*** approaches defined above, the specific mechanisms for allocating use *within* sectors or common pool can also vary. It is useful to distinguish between ***primary distribution mechanisms*** (which distribute most of the use, usually well in advance of when trips will be taken), and ***secondary distribution mechanisms*** (which distribute use when there are cancellations or no-shows from the primary distribution).

Primary mechanisms tend to use one of six alternatives briefly described below. More detailed descriptions and discussions of advantages and disadvantages are provided in Chapter 5.

- ***Pricing and priced-based auctions.*** This allocates use to those willing and able to pay more money. Pricing is the most common way to allocate goods in market economies, but it is less often applied to "non-market goods" such as space on a public river. Nonetheless, outfitters often allocate space on their trips by the prices they charge, and priced-based auctions have been used to allocate prized hunting permits in several states (a concept that could be applied to allocating use to the non-commercial sector on rivers).
- ***Reservations*** are often used when pricing alone does not effectively allocate a commodity. They tend to favor people who can plan further ahead and are willing to reserve a trip in advance of other prospective users. Reservations are a common allocation mechanism in the travel industry (e.g., for hotels, airlines), and have frequently been used to ration campground sites, public use cabins, or space on concession tours in natural resource settings. In most commercial use allocation systems, outfitters combine reservations with pricing to allocate space on their trips.

- ***Pure lotteries.*** In a pure lottery, individuals or groups compete for an "equal chance" to access the river. Like reservations, lotteries tend to favor those who can plan ahead because they typically occur well in advance of trips.
- ***Weighted lotteries.*** In a weighted lottery, selection probabilities are altered for certain groups to serve other management goals or be more "fair" (e.g., by increasing odds for previously unsuccessful applicants or those who have been unable to visit the river more recently).
- ***Points-based auctions.*** This mechanism awards access to those who have been waiting the longest, as determined by cumulative "years on the list." A variation of this option has been implemented in Grand Canyon for the transition from an old waiting list system to a weighted lottery (see side bar in Chapter 7).
- ***On-site queuing*** (also known as "first-come/first-served) trades time rather than money for a commodity. Queues are common for distributing commodities such as concert tickets (where fans camp in lines the night before tickets go on sale), and have been used in river settings where a proportion of permits are available to those who show-up at the launch. On-site queuing is distinguished from "virtual queuing" (e.g., web-based first-come/first served systems) or web-based waiting lists, which are typically coupled with a reservation mechanism.
- ***Merit*** systems allocate use to special populations to serve other management goals. They include allocations on the basis of some skill, knowledge, past behavior, or special status (e.g. a landowner), or allocations to educational, non-profit, research, or administrative trips. In most cases merit mechanisms allocate a small amount of use and are not considered part of a primary allocation system.

Secondary mechanisms for redistributing cancellations and no shows tend to employ one of four alternatives described below. These can make use available to all users, or can be modified to favor previously unsuccessful applicants or those with other characteristics. More detailed descriptions and discussions of advantages and disadvantages are provided in Chapter 6.

- ***Call-in or web-based systems*** re-distribute use to those willing to check-back frequently. These are generally reservation systems for "difficult-to-predict" available space, and the responsibility is on users to claim unused access.
- ***Notification systems*** re-distribute use to known "interested users" (usually unsuccessful applicants from the primary distribution) who are presented with a take-it-or-leave-it option when cancellations occur. Also known as a "waiting list," this option requires the agency assumes more responsibility for finding users to claim unused access.
- ***Supplemental points-based auctions or lotteries.*** This mechanism operates a lottery or points-based auction as a permit becomes available. It works best when cancellations occur well before actual launch dates.
- ***On-site queuing*** (also known as "first-come/first-served). Similar to the system described under primary mechanisms, it favors local users who can spontaneously claim a cancellation on-site.

Categories of use

There are several ways of distinguishing different types of users. In many allocation systems, users are primarily distinguished by whether they are commercial or non-commercial (see below), although other characteristics could be used. The following summarizes some conventional

distinctions used in this report; formal definitions for these use categories may differ (or may not be used at all) by different agencies or rivers (e.g., some agencies manage commercial use through concession contracts, while others have Special Use Permit or Commercial Use Authorization programs).

- ***Commercial use*** refers to trips where users pay an outfitter for equipment, services, and expertise when taking a trip down a river. It is distinguished from non-commercial use primarily by the presence of guides or other paid staff on the trip. It doesn't include trips where people rent equipment or pay for services such as shuttles or food packing, but don't have guides (sometimes described as "semi-commercial," "outfitted use," or "livery services" see below).
- ***Non-commercial use*** refers to trips without guides, where users share costs and chores. On some rivers, non-commercial users may rent boats or other equipment, pay for shuttles or food packing, or otherwise receive help in organizing their trip. Non-commercial trips are also commonly known as "private" or "do-it-yourself" trips.
- ***Outfitted use*** is occasionally used to identify non-commercial trips using rental equipment. "Equipment-only outfitters" or "livery services" that provide this gear but do not provide guides are distinguished from "full-service outfitters" who have guides. In general, equipment-only outfitters do not control an allocation of use, while full service outfitters generally do (under split systems). However, some livery services have exclusive concession or Special Use Permit contracts.
- ***Charter trips*** refer to trips where individuals who are organized as a group contract with an outfitter to provide a commercial trip (without other users accompanying them). In many ways, they are similar to non-commercial groups (they tend to have smaller group sizes and their goal is to take the trip by themselves), but they require a guide and/or equipment from an outfitter.
- ***Tour trips*** refer to trips organized and scheduled by a full service outfitter, which combine individuals from several separately contracted groups. With tour trips, people join an existing trip expecting be combined with people who they don't usually know.
- ***Outfitters*** own or operate a commercial company (either full service or equipment-only); ***guides*** refer to staff who operate individual trips (which may include baggage boat operators, "swampers" or other people who facilitate the trip on-site).
- ***Commercial passengers*** refer to the people that take commercial trips (charter or tour trips).
- ***Administrative use*** refers to several types of trips that may occur outside of the commercial and non-commercial sector. Common administrative trips include ranger patrols, planning and monitoring trips, research trips, and "VIP show-me trips" (e.g., for congressional representatives, other agency officials). Administrative use sometimes includes educational or special group trips (see below), in which case it is not counted as part of the commercial or non-commercial sectors.
- ***Educational or special group trips*** refer to trips taken by universities or conservation Non-Governmental Organizations (NGOs),clean-up trips, or special needs groups (e.g., persons with disabilities, access challenged groups). Some agencies or rivers consider this a third category of use (along with commercial and non-commercial), which blurs distinctions because commercial outfitters are often hired to operate the trips. Other rivers simply include them in the administrative use category. Regardless of how these trips are classified, there are challenges deciding eligibility criteria for such trips or deciding how many are appropriate.

Preparing for allocation decision-making

Allocation only becomes necessary when use exceeds capacity, but waiting until then to prepare for allocation decision-making is likely to increase controversy and limit management options. Seemingly innocuous "incremental" decisions can effectively preclude allocation choices, while planning ahead can provide more information and allow a range of allocation solutions. If you think use limits and allocation systems are in your river's future, you might consider the following:

- ***It starts with a capacity.*** Several recreation planning frameworks (including Limits of Acceptable Change [LAC] and Visitor Experience and Resource Protection [VERP]) have been developed to address visitor impact issues by (1) defining valued recreation opportunities, (2) establishing standards for important indicator variables, and (3) identifying management actions that would meet those standards. These standards-based frameworks can be used to establish a numeric capacity, but they tend to consider use limits a "last resort" and fail to recognize other management benefits of capacities (Haas 2001; 2004). If you think a use limit will eventually be needed, make sure to apply these frameworks to land-use and activity/project plans so they specify an explicit capacity.
- ***Understand use-impact relationships.*** Not all impacts are correlated with use levels, but many social impacts are directly related to use. Documenting these links is critical for setting capacities and recognizing when use levels are approaching them.
- ***Be careful about burning "management flexibility" with indirect (no capacity) strategies.*** Managers often employ "indirect" impact reduction actions to postpone implementation of a use limit (and the allocation system that comes with it). But if use continues to rise in spite of those actions, use and impacts will be that much higher when you are finally serious about limits. Allocation issues are challenging enough when use is equal to demand (when it has just reached capacity). Trying to develop an allocation system while simultaneously "turning back the clock" (reducing use) is much more difficult. Saving some "indirect" management actions may also provide some valuable flexibility if allocations need to be adjusted to smooth the transition or encourage stakeholder support.
- ***Be careful about limiting commercial use before non-commercial use.*** Most split allocation systems limit commercial use before instituting a full system, and dozens of rivers currently limit commercial use but leave non-commercial use unlimited. There is nothing inherently wrong with this incremental approach, particularly if the commercial sector is responsible for most of the use or growth. However, a "commercial first" limit program tends to "pre-determine" a split approach if a full system is ever implemented. Should you want the option to consider a common pool in the future, explicitly reserving that right may be necessary before starting limits for commercial use only.
- ***Monitor demand when use is unconstrained.*** Before use limits are imposed, relative demand between commercial and non-commercial sectors is unconstrained and "natural." If one chooses a split allocation approach, this information is invaluable for establishing the initial split.
- ***Define capacities early; remind the public when capacities are approached.*** Capacities that haven't been exceeded are easier to set, and transitions to permit systems are easier to accept if users and stakeholders see them coming. Allocation systems can be logistically complex and controversial, and the amount of front-end work is easy to underestimate.
- ***Agree on allocation goals before developing a system.*** The details of allocation systems can be controversial and polarizing. Focusing on general allocation goals before getting into the details is one way to address these decisions. Chapter 3 reviews potential goals and how they may be used to evaluate allocation system choices.

Tubers and canoers on the Niobrara National Scenic River. Allocation systems may distribute use both within and among the commercial and non-commercial sectors.

Chapter 3. Criteria for evaluating allocation systems

This chapter reviews allocation goals and develops other ways of evaluating whether an allocation system is successful. Much of the material on idealized and pragmatic allocation goals is summarized from a longer treatment by Shelby and Danley (1980). The chapter includes a sidebar on "calculating a user scorecard" to assess how use is being currently distributed.

Idealized allocation goals and "fairness"

Allocation is needed when resources are scarce, and society endeavors to share those resources through "distributive justice" – a normative ideal where individuals obtain what they "ought" to have based on some "fairness" criterion. The problem comes in deciding what defines "fair" using concepts such as equality, equity, need, and efficiency. Brief summaries of these idealized goals are provided below:

- ***Equality*** is based on egalitarian principles that people have equal rights to certain benefits. Most simply, equality is achieved by providing equal shares of a commodity, or equal chances to obtain it (a variation necessary when a commodity is not divisible). In river allocation, equality may be an issue during comparisons between commercial and non-commercial sectors, support for common pools or adjusting split approaches, or support of pure lottery mechanisms.
- ***Equity*** is an alternative to a strict equality goal, and generally refers to balancing individuals' contributions with outcomes in a distribution system (Homans, 1961), and generally addresses the concept of "fairness." Equal opportunity to run a river may not be "equitable" or "fair" if there is general recognition that some individuals have invested more (effort, money, time) to obtain a permit. Equity-based goals in river allocation might argue for weighted lotteries or points-based auctions (more equitable or "fair" for previously unsuccessful applicants), reservations (more equitable for people who plan ahead), or pricing (more equitable for people willing to pay more). Equity issues also play into comparisons between effort to compete in commercial and non-commercial sectors (the latter often has more fees and requires more user effort through applications and scheduling), or the creation of separate allocations for landowners or service groups.
- ***Efficiency*** refers to an economics principle where a resource is maximized if it is put to its most highly valued use. Market-based economies attempt to maximize efficiency by distributing goods to those willing to pay the highest price for them, a concept that requires assumptions about the value of money (which is not equally valuable to people with different levels of wealth), and the ubiquity of fair markets and information. For non-market goods (like space on a river), efficiency-based arguments are raised when non-commercial users claim that a trip is more valuable to them than a commercial passenger who might be willing to substitute a week at a resort. Efficiency also plays into discussions of how certain "currencies" improve the ability to obtain a permit (e.g., greater wealth is an advantage with pricing, longer planning horizons is an advantage with reservations), with a person's willingness to use this currency relative to how they value the trip (Shelby, Whittaker, & Danley, 1989a).
- ***Need*** is a final distributive justice ideal (Deutsch, 1975). At a societal scale, government programs often attempt to provide a "safety net" of basic services before funding higher order (but less basic) services for others. In a river allocation context, need is less commonly discussed, but may provide the basis for administrative, research, service, or landowner allocations.

Considering how specific allocation mechanisms serve these various goals can be interesting and helpful, providing one set of criteria to judge an allocation system. But more often allocation systems are complex enough to support several goals, and linking specific features to these idealized goals can be challenging. Evaluating allocation choices based solely on these idealized goals also ignores political and social realities, because stakeholders' pragmatic assessments of their chances under any particular system may carry equal weight (Shelby, Whittaker, & Danley, 1989b).

Pragmatic goals from stakeholders and agencies

I know the world isn't fair, but why isn't it ever unfair in my favor?
Bill Watterson (Calvin & Hobbes)

A second way of judging allocation systems focuses on more "concrete" goals commonly expressed by stakeholders or agencies. Some of these may stem from idealized goals discussed above, while others are related to perceptions about which systems favor certain groups, or fit with the way a group plans and organizes trips. Pragmatic goals (and indicators of whether they are being met) are listed below. Many were developed from a focus group study of Hells Canyon boaters (Shelby & Danley, 1980); Chapter 9 provides additional information about stakeholder preferences.

- ***Simple and easy to understand.*** There are obvious benefits to simpler vs. more complex systems, and many stakeholders encourage reducing "red tape" as much as possible. "Understandability" is a related concern, because more complex systems may discourage some users. Indicators of simpler systems might include the length of regulations and the number of questions from users. A survey of users can also help (see Chapter 9).
- ***Efficient utilization of capacity***. With demand exceeding the capacity of a river, there is pressure to use available supply. "No shows" and cancellations are likely with any system, but some are better at filling those spaces. Indicators of more efficient systems include the percentage of "no shows" or cancellations, or the ability to be flexible across sectors.
- ***Flexibility.*** River trip plans often change. Weather, flow levels, group composition, boat availability, and the health of members or trip leaders can all affect whether a trip can utilize a permit or have to cancel. Some allocation systems accommodate more of this flexibility than others. Flexibility indicators include ability to change trip leaders, add or delete group members, re-schedule dates, or change trip lengths.
- ***Minimizes ability to "work the system."*** This is the flip-side to flexibility, and refers to rules that discourage users from searching for "loopholes" that allow them to obtain permits, control allocations, or join trips more than their "fair share" (even as these may be legitimate ways to obtain a permit). Potential measures track outfitter utilization of their allocations, permit holders that cancel or no show, or the number of "repeat users" relative to the apparent odds of obtaining a permit.
- ***Business stability for outfitters.*** Outfitters have an obvious interest in allocation systems that encourage business stability; agencies in turn may benefit from stable outfitters that provide consistently high quality products because they are in it "for the long run." Measures may track the number and rate of change among outfitters, the size and rate of change among allocations, or analyses of outfitter financial health. A related issue focuses on whether outfitters are able to capture the value of an allocation (see sidebar in Chapter 4).

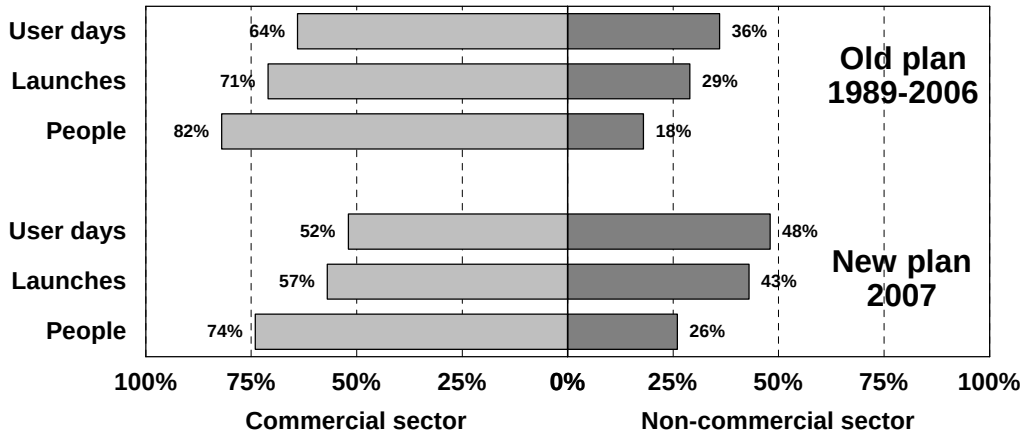
- ***Avoid encouraging additional use.*** Some allocation systems may encourage outfitter marketing or private user participation, which could attract greater use than might otherwise occur. Since an allocated river by definition already has more demand than supply set by the capacity, a system that encourages more use has a "negative feedback loop." Analyses of outfitter marketing and pricing efforts might help indicate whether this is occurring.
- ***Equal procedures for different groups.*** This commonly-expressed goal among non-commercial boaters relates to the common pool vs. split allocation debate (see Chapter 4), but can be easily measured through an analysis of procedures for users in different sectors. A survey of permit system applicants may also help evaluate the relative "burden" of procedures for each sector.
- ***Responsive to demand by different groups.*** This goal is related to the common pool vs. split allocation debate, and focuses on whether allocations can be adjusted across sectors. It relates to flexibility and efficient utilization goals, and can be measured by the extent that unused allocations can be utilized by other users.
- ***Agency costs.*** Given societal goals to contain unnecessary agency spending and the reality of limited agency budgets, minimizing financial costs is important. In some cases, this can be assessed by summing staff and equipment costs (particularly if these operations are contracted), but there are likely to be hidden costs associated with initial development and early modifications.
- ***Costs to users.*** In addition to agency costs, allocation systems pass some direct financial costs on to users (through fees), as well as the indirect "time and effort" costs to participate. Higher agency costs do not always translate into higher user costs (e.g., developing an efficient web-based application process may reduce user time and effort). Measures include fees for applications and use, and estimates of user burden to participate in the system.
- ***Legal viability.*** This agency criterion can substantially constrain allocation choices. Many allocation systems are tied to historical use patterns or previous regulations, so larger changes (e.g., a shift to a common pool from a split system) may induce legal challenges. Based on the review of existing systems (see Chapter 7 and 8), there is considerable agency discretion in developing allocation systems, and if one defines success as "not getting sued" (or having your system upheld even after being sued), several systems are successful (see Chapter 9). However, there may be legal vulnerabilities when new allocation systems are implemented even when they are modeled after older, tested systems. Different agencies, designations, and historical uses may all play roles in legal viability.

Calculating a "use scorecard"

Please don't ask me what the score is, I'm not even sure what the game is.
Ashleigh Brilliant

Allocation systems distribute different amounts of use to different identifiable groups, and split allocation systems in particular encourage "keeping score" between sectors to see "who gets more use." However, results depend on whether you count users, user-days, launches, or boats. A comprehensive comparison provides information about all of these variables (see Chapters 7 and 8), but deciding which deserves more attention depends on resource and trip characteristics, as well as the impact and capacity issues the system addresses. Some considerations follow:

- ***What use level "unit" creates the most important impacts?*** Use limits are designed to control important impacts, so allocation systems should arguably distribute use by the units that cause these impacts. If river encounters or camp competition are the basis for a capacity, the number of launches is probably more important than the number of people, boats, or user days. If the concern is waiting times at rapids or boater-angler encounters, the number of boats may be more important.
- ***The choices are easier when trip characteristics are homogenous.*** On some rivers it may be hard to distinguish commercial and non-commercial trips. The more similar they are in terms of trip length, group size, and boats per trip, the less important it is to track all the different variables – all will provide similar estimates of the "split."
- ***Pay attention to more variables when trip characteristics are different.*** On other rivers, differences may be large and predictable (e.g., commercial trips are larger, non-commercial trips have more boats per capita and stay longer). It is more important to track all the relevant variables, and stakeholders can focus on the measures that work best for them. "User days" probably best "equalizes" sector differences, but few social impacts are related to user days alone. In these cases, a "use scorecard" (and the comparison graphs they produce; see below) should probably show the full range of variables, particularly as the level of controversy rises.



Annual Grand Canyon allocation splits (before and after 2006 plan).
Note: A few Jan/Feb launch dates were not available so comparisons are not quite "apples to apples."

Chapter 4. Allocation approaches

This chapter reviews three basic allocation approaches, and describes how and where they have been applied. It includes a sidebar about the monetary value of commercial allocations.

Split allocation

Under a split approach, use is distributed within two basic sectors, commercial and non-commercial. Sometimes there may be additional allocations for a "special" sector to provide for educational or service groups, and on some rivers "administrative use," (research, patrol, and search and rescue-related trips) is a separate sector (although it rarely receives a set amount of use).

In the ***commercial sector,*** split use is further allocated among individual outfitters. Under most split systems, outfitters receive permits for a block of access rather than the simple privilege to operate. They generally control how they use their allocation, and can adjust their number of trips, group sizes, trip lengths, and scheduling as long as they don't exceed other components of the use limit system (launches per day, group size limits, service days per year and so on).

In most cases, commercial allocations provided to original outfitters were not distributed through a market or a bid/prospectus program; in other words, outfitters could not initially purchase them. Technically speaking, commercial allocations are permitted and managed by an agency and cannot be sold. Historically, however, most allocations have remained with a business when it is sold to a new owner (agencies "transfer" the permit), and the value of these businesses has been enhanced by the allocation (Shelby, 1984). A quasi-market operates in these outfitter-to-outfitter transactions, allowing them to collect a windfall (sometimes labeled a "blue sky") value. If one accepts that this occurs, outfitter-to-passenger transactions are a consequence and they operate in a market system that allows outfitters to capture the monetary value of access above and beyond the services they provide (boats, equipment, guides, etc.). This topic is further discussed in the sidebar at the end of this chapter.

In the ***non-commercial sector,*** the allocation is usually distributed via permits to permit applicants (individuals) who are typically representing a group of boaters (or will organize a group). The permit system is managed by an agency using essentially non-market rationing mechanisms (such as reservations, lotteries, queuing) to keep below per day, week, or per season use levels. In some cases, administrative attention is required throughout the year to release an appropriate number of non-commercial permits to stay below seasonal or annual limits.

Existing split allocation systems

Several issues have developed from the widespread use of split allocation systems:

- Split systems developed through "incremental" decision-making on most rivers, resulting in some unintended consequences. When use and impacts were low, there was little impetus to limit use. However, as use and impacts increased, outfitters were often the first and easiest type of use for managers to limit; the public is generally supportive of limiting commercial uses on public rivers, and may pressure agencies to adopt this approach. Adapting existing permit guidelines and practices, many managers essentially "certified" existing outfitters and then ensured that their historical use would be allowed. This created a *de facto* split system even in cases where non-commercial users were not initially limited. This strategy also may

have been widely adopted because managers shared information through an Interagency Whitewater Committee (a group of federal river managers; later it developed into the American River Management Society (ARMS) and then the River Management Society).

- Many split systems base their allocation percentages on historical baseline data (usually the proportions of use in the period immediately prior to use limits). The Grand Canyon split was originally based on historical use when limits were implemented in 1972-73, with adjustments in subsequent planning efforts (usually with some "negotiated" changes). Other split allocations with historically-based percentages include the Middle Fork Salmon, Selway, and Hells Canyon. There is no bias toward either sector with historically-based splits when they are first implemented (it reflects actual demand at that time), but changing demand in either sector can lead to disparities if percentages don't also change.

  Examples of rivers with a higher non-commercial split in terms of launches include the Selway, Smith, and Tuolumne. Among multi-day rivers, the Grand Canyon appears to have the highest proportion of use in the commercial sector; this is at least partially related to the advent of use limits when non-commercial river running was just starting to grow. Chapter 7 provides additional information about percentage splits on North American rivers.

- Other split systems provide 50% of launches, people, or user days to each sector. Although this division is "equal" (because there are two groups), it may be arbitrary or "unfair" if demand for the two sectors are not similar. Arguments over the demand or sizes of sectors are at the heart of many complaints about split systems; assessing demand is challenging because access is allocated through different (and probably non-comparable) systems.

  Examples of current 50/50 split systems (as measured by number of launches) include the Main Salmon, Yampa, and the Green River in Desolation/Gray, although commercial use is higher in terms of the number of people because commercial group sizes are larger. Chapter 7 provides more information about these splits.

- Few agencies have substantially adjusted annual allocation percentages, even when evidence suggests demand has changed over time. When adjustments have occurred, as in Grand Canyon, they happen during planning efforts (every 10 to 15 years) and have been generally based on political considerations and negotiations with stakeholders rather than assessments of relative demand. Alternatives to "negotiated" adjustments include demand studies or self-adjusting registration systems that provide more accurate information about interest in different types of trips or waiting times for different types of trips.

Impacts and effects on user groups

Because split systems have been in effect for many years, it is possible to assess general impacts on different user groups. Below is a list of commonly-cited advantages and disadvantages of split systems, as well as commonly-cited reasons for having a commercial-leaning split or a non-commercial leaning split. Many of these come from public or stakeholder comments, so they are not necessarily documented, agreed upon by other stakeholders, or equally valuable (or detrimental).

Advantages

- ***Historical precedent.*** Many split systems were based on historical use levels when use was first limited (e.g., Grand Canyon in 1972-73). Users generally understand the system, including advantages and disadvantages. While some users appear unsatisfied with the unintended consequences of split systems or the proportions in existing splits, those impacts are generally known. In contrast, consequences and the proportions of use between sectors

under a common pool system are less well known. This "comfort" with "the way we've always done things," is the basis for many of the other advantages listed below.

- ***Predictability and monetary gain for outfitters.*** Under a split system, outfitters receive a block of access and some freedom in how they use it. This allows them to schedule logistics and labor, plan long-term equipment needs, and develop the type of trips that most efficiently and profitably use their allocation. More importantly, it allows initial outfitters to capture the monetary value of access through outfitter-to-passenger transactions (after receiving initial allocations for free through non-market mechanisms).
- ***Limited competition among outfitters.*** Split allocation systems limit competition among outfitters because each receives an (usually) unchanging allocation. With a guaranteed market share, outfitters can focus their efforts on logistical efficiencies to improve profits rather than competing with other companies. This may limit the need for outfitter advertising and encourage cooperation between outfitters on the river (which may enhance safety and reduce on-river competition impacts).
- ***Guaranteed access and simple procedures for commercial passengers.*** Commercial passengers do not have to compete with non-commercial users in a split permit system to gain access, allowing them to avoid cumbersome procedures and uncertainty about whether they will receive a permit for a preferred date. Split allocation systems also provide regularly scheduled commercial trips, allowing passengers to reserve spaces on those trips through the pricing and reservation system run by outfitters.
- ***"Manageability" of use levels and impacts.*** Split systems generally provide more certainty about the pattern of trip types that will be launching each day, which can be managed to produce appropriate impact levels. Many impacts are related to the pattern of different trip types, and a split system that remains relatively constant from year-to-year produces a more predictable and thus easily-managed system.
- ***Agency administrative convenience.*** A split system may be easier for agencies to administer than a common pool system because access distribution to commercial passengers is "delegated" to commercial outfitters. The agency only has to oversee commercial allocations to a relatively smaller number of outfitters. With a common pool, however, there is only one system to operate, which can simplify other agency responsibilities.

Disadvantages

- ***Creation of separate and unequal allocation systems.*** A split system has two separate ways of distributing access that cannot treat users equally. Under the commercial system, users compete for space on trips through pricing and reservation mechanisms. In the non-commercial sector, users compete through various (mostly non-market) mechanisms depending on the river. In all cases, non-commercial mechanisms have fees and regulations that are often more complicated and cumbersome than reserving a trip with an outfitter.
- ***Commercial outfitters control and profit from distributing public access.*** A split system gives *de facto* control of some public access to private entities (outfitters), and this is generally sold to passengers (above and beyond the cost of other services). Outfitters also sell access rights when outfitting companies are sold (see sidebar below).
- ***Creates a "quasi-monopoly" among outfitters.*** Control of commercial access by a small number of outfitters creates a quasi-monopoly and raises the possibility of price collusion, although permits and/or concession contracts could (but rarely are) used to constrain such

practices. The benefits of a "quasi-monopoly" probably also lead outfitters to support *status quo* management and resist changes in how commercial trips are provided and distributed.

- ***Creates separate groups and encourages conflict.*** Split systems encourage users to identify with a sector and engage in debates over allocation. This may hamper communication or cooperation between these groups on the river. The allocation "debate" may also divert attention from other issues where there may otherwise be common ground.

Reasons for higher commercial allocations

- ***Provides access for people who can only take commercial trips.*** Commercial trips may provide access for people with disabilities, unskilled, inexperienced, or lack appropriate equipment. A split system can help encourage the availability of such trips.
- ***Encourages long-term commitment to the resource by outfitters.*** Guaranteed allocations for outfitters reward those with a history of use. With guaranteed allocations, outfitters may have a greater stake in reducing impacts and working cooperatively with agencies.
- ***The potential population of commercial passengers is larger.*** No study to date has effectively assessed relative demand for commercial and non-commercial use on permitted rivers. However, the number of people who ***could*** participate in a non-commercial trip (people with access to boats and the skills to run multi-day trips) is probably smaller than the number of people who ***could*** become commercial passengers (who pay for guides to provide such equipment and skills). Other factors may have greater influences on actual demand, but the initial size of potential populations may be relevant.

Reasons for higher non-commercial allocations

- ***Demand for non-commercial trips may be growing at faster rate.*** Even if the population of users is larger in the commercial sector, demand for non-commercial trips may be increasing at a faster rate. The inability of split allocation systems to adjust to changing demand is a becoming a major complaint. For example, fewer people running Grand Canyon were capable of organizing self-outfitted trips when use limits were first imposed, but the National Park Service (NPS) recognized the non-commercial sector had grown substantially when it increased non-commercial allocations in 1980 and 2006. (Note: the NPS did not increase non-commercial use at the expense of commercial use in either plan, and allocation decisions were not based on actual demand information; see case study in Chapter 8).
- ***Higher cost of commercial trips discriminates against the less wealthy.*** Commercial trips generally cost more and some studies show that commercial users have substantially higher incomes than non-commercial users (Hall & Shelby, 2000). Rough comparisons of non-commercial trips in Grand Canyon (using rented equipment) and commercial trip costs (including labor for crew) also suggest that commercial trips could be offered at lower prices and still produce a profit (GCPBA, 2003).
- ***Non-commercial users may "value" river opportunities more.*** The easy availability of commercial trips encourages passengers who might be satisfied with some other activity (e.g., a week at a resort), thereby displacing non-commercial users who are willing to spend considerable time, effort, or money to take a river trip – if access were available.

Common pool allocation

Under a common pool system, all river access is distributed through the same permit system. People interested in either commercial or non-commercial trips apply for launches through the managing agency, and if successful they choose to: 1) organize their own trip; 2) contract with an outfitter for a chartered trip; or 3) join scheduled commercial trips (hereafter called "tour trips"). For a tour trip to occur in a common pool system, there must be "enough" other passengers interested in the same trip on the same date who are successful in the permit system for a trip to "go."

Existing common pool systems

Common pool systems are often the norm when allocating scarce big game hunting permits, but they are more rarely used in river settings. Hunting permits have traditionally been awarded to individuals, who have the choice to use a guide or organize the trip themselves. Hunting permits differ from river permits in allowing harvest of the animal rather than access, but the overall "product" is still a trip or experience. Guided hunting is also different from many rivers because most hunts are "charters" (a single group organized the trip), while many commercial river trips combine groups of passengers on "tour trips." The effects of common pools on tour trips are a key challenge in implementing a common pool system.

Minnesota's Boundary Waters Canoe Area Wilderness, Oregon's Deschutes River, and two low use fishing permit systems (McCloud River in California and Duke's Creek in Georgia) appear to be the only water-based areas in the U.S. with pure common pool systems. At least two other rivers (Oregon's Illinois River and Montana's Middle Fork Flathead) have suggested they will adopt common pools when defined carrying capacity standards are exceeded and use limits are enforced. Additional information about the Boundary Waters and Deschutes systems is provided in Chapter 8.

Impacts and effects on different user groups

It is challenging to assess specific impacts of a common pool approach for rivers in general. Many of the impacts depend on specific permit distribution mechanism (examined in Chapters 5 and 6), which further interacts with other elements of the use limit system (e.g., group sizes, trip lengths, and type of use restrictions). Existing use patterns or previous allocation systems are important considerations; a common pool system appears more workable for a river with lower use, no history of previous limits, and a smaller proportion of commercial use. With these caveats, the following commonly-cited advantages and disadvantages are associated with common pools.

Advantages

- ***No allocation preference by sector creates a "demand-responsive" system.*** By definition, common pools treat all individuals the same, so there is no "preference" for users from one sector versus the other. This eliminates real or perceived advantages, and equalizes the "percent of disappointment" (the proportion of each which is unsuccessful). However, specific distribution mechanisms within a common pool may differentially favor those who organize their own groups (non-commercial groups and charter commercial trips) compared to those interested in joining "tour trips."

- ***Market-based incentives and open competition in the outfitting industry.*** Common pools do not give outfitters a guaranteed allocation, so they have incentives to provide high quality trips that attract successful permit applicants (who could otherwise choose to self-outfit). This may encourage reinvestment in outfitting equipment, improve the quality of trip features, increase the diversity of trip options, and lower trip costs – benefits for commercial passengers. However, increased competition may also reduce profit for outfitters, which may affect their services, capital investments, and trip offerings in other ways.

  Determining the total financial impact on outfitters from a common pool system is challenging because there is a tension between the benefits of competition and the costs of uncertainty on investments and business practices. Some outfitters are likely to thrive by providing superior services in efficient ways, while others may not fare as well.

  It is difficult to know the number of outfitters or the diversity and quality of trips that would be provided under a common pool system. These are information gaps likely to be filled only if more common pool systems occur (and agencies monitor their consequences).

- ***Limits agency need for bid-prospectus processes to select outfitters or adjust their allocations.*** Under split systems, access within the commercial sector is typically distributed among a small number of companies, most of whom received allocations at the time of initial use limitations. On some rivers, the number of outfitters and size of their allocations are periodically adjusted based on performance and utilization, but few use a formal bid-prospectus system that invites potential new outfitters to compete. A common pool system does not eliminate agency responsibility to certify outfitters and review their performance, but the size of an outfitters' allocation does not have to be managed because the market will do so (the number of successful permittees the outfitter can attract).

- ***May encourage greater choice in outfitting services for permittees.*** Many rivers have a small number of outfitters who offer fully-outfitted trips (although others may have dozens). Many offer both tour and charter trips but most do not rent equipment for non-commercial trips. However, an emerging industry (most notably in Grand Canyon and on the Main Salmon in Idaho) provides "partial outfitting" assistance to non-commercial trips (e.g., boat rental, equipment rental, shuttles, food buying and packing). Under a common pool approach, outfitters have greater flexibility to offer a range of services.

- ***Provides access directly to the public; this eliminates the "selling" of allocations during outfitter transfers.*** On many rivers, original permitted outfitters did not purchase the allocation they received. However, when those businesses are sold, their allocations have historically been "transferred" to the new owner. Even though federal regulations (e.g., BLM's special use permit regulations (43 CFR 2930) and NPS's concessions policies (NPS 1998; 36 CFR Part 51)) assert that allocations are not "owned" by outfitters and cannot be sold, it is clear that an allocation is a valuable component of an outfitter's business (Shelby, 1984; see sidebar below). A common pool system may more directly distribute access to users; this would ensure allocations are not part of an outfitter business and could not be sold.

- ***All permits are controlled by the managing agency.*** A common pool system distributes permits directly from the agency to the public, without using outfitters as an intermediary; distributions are more transparent and uniform.

Disadvantages

- ***Agency administration complexity.*** A permit system that distributes access to both sectors is necessarily larger and more complex than one that allocates permits for only the non-

commercial side. Advances in electronic reservation processes are likely to be able to address this issue, but not without effort on the front-end as systems are developed (Shelby & Digennaro, 1995).

- ***Challenges associated with commercial "tour trips."*** In many ways, people in commercial *charter groups* are similar to non-commercial groups. They travel in their own group, have formal or *de facto* trip leaders, and often have similar group sizes. They should have similar abilities to obtain permits from a common pool. In contrast, passengers wishing to join a commercial *tour trips* are organized differently. This raises: (1) fairness issues if they have to compete in the same pool with self-formed groups, (2) scheduling challenges, and (3) efficiency issues for outfitters.

  Fairness issues: Tour trips combine individuals or small groups who do not want (or can't afford) to charter an entire trip. These independent groups might be too small to fairly compete with the charters and non-commercial groups under some potential common pool distribution mechanisms (e.g. weighted lotteries). Common pools make more sense when the size of commercial and non-commercial groups is similar (e.g., Boundary Waters), or when the proportion of tour trips appears small.

  Scheduling issues. Under split systems, outfitters often schedule "tour trips" based on "hoped-for demand," and then encourage potential passengers to reserve those dates. Under a common pool system, all the passengers have to obtain a permit to join such trips. If outfitters schedule (or are allowed to schedule) too many trips relative to "tour trip" demand, too few passengers will be successful and some trips would have to be cancelled. In this way, "tour trip" passengers are partially dependent upon other passengers' success in the system.

  Inefficiency issues. A related issue is the relative "inefficiency" of commercial trips with a common pool because each scheduled trip may not be filled to its "designed" size (if not enough prospective passengers secure a permit). Under a split system, the outfitter can easily add passengers if there is space (the outfitter controls their allocation). This may affect profit from tour trips under a common pool approach. It fails to use space on trips that are already going, thus reducing access and profit for logistical rather than impact-related reasons. Without monitoring, it is difficult to predict the extent of these inefficiencies or their effects on outfitter profitability under a common pool. If it is substantial, a mitigation option is to allow outfitters to add passengers per tour trip after enough passengers (who went through the common pool) have signed on to the initial trip (this is allowed on the Deschutes).

- ***Less predictable business climate for outfitters.*** Tour trip scheduling and efficiency issues are likely to add uncertainty to the outfitting industry, particularly if a common pool was instituted as a replacement for a split system. This may discourage longer term investments, although the extent of these impacts is difficult to predict.

- ***Increased advertising***. In response to greater uncertainty, outfitters might increase marketing and advertising to encourage prospective tour group passengers to enter the common pool (or to convince successful permit applicants to charter commercial trips). This would increase their operating costs (which might affect the price of trips), as well as encourage higher demand for a place where demand already exceeds supply.

- ***Value/equity/intangibles from historical use.*** A common pool system does not provide priority access for any particular outfitter, so the system does not necessarily reward outfitters who have offered trips in the past. This may discourage some outfitters from

investing effort in conservation, safety, or interpretive contributions to the river's management.

- ***Common pools may increase paperwork for commercial passengers.*** Under split systems, commercial passengers essentially do not participate in a permit system. They organize their trips directly through outfitters, who have their own allocation and distribute space on trips through a pricing and reservations. As a way addressing this concern, common pools may allow outfitters to apply for permits on their clients' behalf (allowed on both the Lower Deschutes and in Boundary Waters Canoe Area Wilderness).
- ***Limits access for "spontaneous" commercial passengers.*** A common pool system (because of its larger size and complexity) may create an advantage for people or groups that can plan ahead and understand the intricacies of the permit process, although a common pool on the Lower Deschutes in Oregon addresses this by releasing percentages of "space on the river" close to launch dates.

Adjusting split allocation

Because split systems allocate use differently in commercial and non-commercial sectors, there is no mechanism to assess demand by sector or re-allocate between sectors. The concept of an "all-user registration" was developed during the 2003-2006 Grand Canyon planning process as a potential way to assess this demand (although it was removed from the final plan to provide "greater stability" in sector use levels from year to year). In essence, such a system could create an "adjusting split allocation" system. The following describes the overall concept and how it could be used to assess demand and better inform split adjustments of allocation percentages.

With a registration system, all potential users (commercial and non-commercial) would be required to register. These are the people who are ready to take a river trip in the near future (i.e., within two years).

At the time of registration, prospective users would be required to state their preference for commercial charter trips, commercial tour trips, or non-commercial trips; additional questions (where relevant) might ask about preference for group sizes, trip lengths, or motorized and non-motorized trips. This would provide definitive information about "initial trip type preferences" which could later be compared with the kinds of trips that people eventually take ("actual trip type distributions"). This would be the first time an agency using a split system could attempt to assess stated demand for different trip types; it would begin to bridge a fundamental information gap in the allocation debate.

The registration system could also track the percent of unsuccessful users and the length of time between initial registration, obtaining a permit, and actually taking a trip. This could provide information about inequities between sectors, a substantial improvement over other demand indicators.

Adjustments in the split could be made through a public adaptive management process that considers trip preference, waiting time information, or other factors, and could be "phased-in" over several years. The process could set limits on the potential change in launches, people, or user days to ensure that neither sector is decreased too fast or too far.

The idea would be to routinely adjust the number and type of trips based on relative demand, without creating too much change in any given year (allowing outfitters to plan for re-

allocations). Individuals who applied but did not obtain a permit could improve their chances in subsequent years because their preferences would influence future allocation adjustments.

Advantages

- ***Stable scheduling and efficiency for commercial "tour trips" (compared to a common pool system).*** Commercial tour trips could be scheduled by outfitters from their allocations, and registration would not prevent them from adding passengers to fill trips to designed capacity.
- ***Improved information about commercial trip preferences.*** Outfitters commonly suggest that existing trip types reflect market demand, but this cannot be substantiated under a split system (unless outfitters monitored and shared the number of people they "turn away"). An all-user registration system could assess demand for different types of commercial trips, helping outfitters to meet users' needs.
- ***Equalizes the "complexity" involved with getting on a river trip.*** Although users could still use separate distribution systems, common registration equalizes some components involved in taking a trip (albeit by increasing the commercial passenger burden). All potential users would have to register and provide the same information, and fees for access to a public resource would be paid (transparently) to the managing agency rather than to outfitters.
- ***Trip type preference and waiting time information allows splits to be adjusted.*** Although users could still use separate distribution systems, the registration list could provide better information about demand in the two sectors. Demand for access may remain greater than supply, but adjustments could be used to equalize the "percent of disappointment" in each sector.

  It is speculative to suggest which sector would actually "do better" under an adjusting system on any given river. Persuasive arguments have been heard from both sides in regard to Grand Canyon, but it probably depends on many factors including the river's characteristics and the kinds of users it can attract, the costs of commercial trips (an easy way to change demand), how non-commercial sector use is allocated, and the types of trips available. Trial implementation (with careful monitoring) may be the only way to find out. An adaptive management component would need to accompany any trial of this system, perhaps with a "sunset" clause to abandon the program if certain potential negative consequences are realized.
- ***Market-based incentives in the outfitting industry.*** Because outfitters could lose part of their allocation if they do not attract future demand, they have incentives to provide high quality trips for less cost. They may improve features, increase options, and lower costs; these are benefits for commercial passengers. However, increased competition might reduce profit, which may affect services, capital investments, and trip offerings in other ways.

  Determining the total financial impact on outfitters from an adjusting system is challenging because there is a tension between the benefits of market-based competition and the negative effects of uncertainty on outfitters' investments and business practices. Some outfitters are likely to thrive by providing superior services in efficient ways, increasing demand for their type of trips.

  It is speculative to state how the diversity, cost, or quality of trips are likely to change on any given river under an adjusting system. It depends on what the data show, how agencies respond to demand, and how outfitters respond to those changes. This is another information gap that probably cannot be filled without trial implementation of an all-user registration system.

- ***Re-establishes some agency control over access in both sectors.*** An adjusting system would return control of the amount of commercial access to the public agency responsible for it. Although this increases overall administration costs (because agencies handle distributions that outfitters handled previously), it ensures a more uniform distribution of access between the sectors.

Disadvantages

- ***Agency administration complexity.*** An all-user registration system would probably require a major administrative effort. A registration list that included commercial passengers and non-commercial participants (not just trip leaders) could exceed thousands of names in a given year. Electronic data management can handle this kind of information, but front-end development of the protocols is likely to be substantial.
- ***Less predictable business climate and potential lost allocation for outfitters.*** An adjusting split system would add uncertainty to the outfitting industry, particularly during a transition phase. It might take two to five years after implementation to collect sufficient information to help make defensible adjustments, and those might have to be phased-in to reduce business uncertainty or other impacts.
- ***Increased advertising***. In response to greater uncertainty, outfitters might increase marketing and advertising to encourage prospective passengers to register and take trips. This could increase operating costs (which could affect the price of trips) and encourage higher demand for a place where demand already appears to exceed supply.
- ***Price-cutting to increase demand.*** Outfitters might decrease prices to create greater demand, even if this diminished short run profits. This might preclude non-commercial users who do not have a pricing mechanism with which they can "compete." Over the long run, however, outfitters will have to balance the benefits of a larger allocation (via lower pricing) versus profits.
- ***Debate over appropriate measures of demand and/or measures of use.*** Decisions about how to compare sector splits (e.g., by launches, users, or user days) would need to be resolved. This debate could focus on real information about demand rather than speculation.
- ***Problems allocating use within the commercial sector after adjustments.*** A static split allocation system maintains the relative sizes of individual outfitter allocations. If adjustments occur, which outfitter might gain or lose launches when adjustments occur?
- ***Increases complexity for commercial users.*** Under most split systems, commercial passengers do not have to participate in a permit system. They organize their trips through outfitters, who have their own allocation and who distribute space on their trips through a pricing and reservation system.
- ***Increases complexity for non-commercial users that are not trip leaders.*** Under most split systems, only trip leaders (applicants on the waiting list) participate in the permit system; their fellow participants do not have to register.

The monetary value of commercial allocations

When carrying capacities were first implemented on rivers in the 1970s and early 1980s, most agencies developed allocation systems that approximated the "existing" split between commercial and private use. They did not anticipate that separate allocations might have unintended consequences. Agencies allocated blocks of access (e.g., user days or launches) among "certified" outfitters, who then distributed that access to their passengers. The general intent was to allow outfitters to take approximately the same number of passengers as in the past; there was little discussion about whether an initial allocation had monetary value, or whether outfitters should be able to "capture" that value.

Selling the real property and intangible assets of an outfitting business (client lists, access to quality employees) is no problem, but most agencies prohibit the sale of an allocation or permit. Instead, the permit is relinquished to the agency with the understanding that the permit will be reissued (or "transferred") to the buyer if they meet agency qualifications (Loomis, 1980; Shelby, 1984). However, the buyer in these cases is clearly interested in paying for the real property, the other assets, **and** the value of the permit (which is needed to offer trips). The agency's refusal to officially recognize the permit sale allows all parties to avow that the business and not permits are being sold, but it also creates a de facto quasi- or black-market for such permits.

Although recent sales analyses have not been published, sales of businesses with associated permits on four western rivers in the late 1970's suggest permits have considerable value beyond equipment and other business assets, and the values are greater on higher demand rivers (Shelby, 1984). The Grand Canyon permit for 10,000 user days "sold" in 1978 was worth about $500,000, with the other assets worth about $400,000. If this is adjusted to current prices, the 2007 access value of a 10,000 user day permit is nearly $1.6 million.

If an agency simply approves such sales (historically, few have been turned down), the value of the initial allocation is captured by the seller and paid by the buyer. Buyers have to eventually recover the cost of purchasing the company that has value above and beyond its equipment and reputation. They may be able to accomplish this through pricing to present passengers (above and beyond the cost of providing services and a reasonable profit), or through a future sale of the company (anticipating that the permit will continue to increase in value). Most outfitters and some agency staff that administer commercial use recognize this value as the "windfall" or the "blue sky" (retirement) value associated with the permit.

Different agencies apply different procedures for assessing outfitter sales and associated permit transfers, and it is beyond the scope of this report to describe the details. Based on interviews with agency staff, some agency reviews of outfitter sales may examine whether a sale value is "appropriate" based on the value of equipment, intangible assets, or other aspects of the business (e.g., competition agreements, business plans, past performance, business references, or sale price relative to annual revenues), but agency discretion rather than specific financial standards characterize these reviews (even so, they have been upheld in legal settings; see chapter 9).

In many other cases, reviews are more cursory, and focus on simply "qualifying" the buyer. Although outfitter sales have been denied for a "price too high" relative to equipment and revenues, these actions are exceedingly rare and undocumented. Agencies may expressly prohibit the sale of permits and sometimes

(continued on next page)

Commercial allocation value (continued)

conduct analyses to prevent "unreasonable" transfers, but observers recognize that allocations are a commonly a substantial component of outfitter sales.

It is rational for outfitters to take advantage of this system. Most work hard to build sustainable businesses, and they are not responsible for the fact of higher demand than supply, or agency decisions to limit outfitters or their use (and subsequent allocations). Only philanthropists wouldn't sell a valuable allocation if they were allowed to do so. Similarly, new outfitters that purchase companies with allocations pay for *de facto* access and it is rational and necessary to protect those investments through the trip prices they charge (which might be lower if they didn't have to cover the "cost" of obtaining an allocation).

Agencies also see some benefits from this system. Allowing outfitters to capture the value of access probably works toward outfitter stability, and "guaranteed" access for outfitters can limit uncertainty and contribute to profitability. There is little public benefit from outfitters that are failing, and successful outfitters support higher quality services or "give back" to the river.

However, this system may allow outfitters to capture and control a valuable public good (a block of access) originally offered at no cost, and new outfitters have to pay for that value and pass the costs on to the public (providing a substantial "entry barrier" to the industry. The important question is, "Is this good public policy?"

This is not the first public resource where such a system has developed. Some public fishery, grazing, and mining permit systems provide vested or preferential rights to individuals that later become sellable (although the rules vary substantially). For other resources, government captures some of the "fair market value" and returns revenue to the public sector (e.g., timber sales, leases for oil and gas production). There are several models for managing private use of public resources, but which is right for allocating river use?

Common pool approaches offer one way to disentangle allocations from sales (see earlier discussion in this chapter). Other approaches could have agencies reclaim allocations when an outfitting business sells, and offer the allocations in a bid-prospectus system or in common pools. Both of these models are strongly opposed by outfitters and their trade organizations (see Chapter 8) for the reasons described above.

Other attempts to constrain the monetary value of allocations focus on fee structures that help capture allocation value to return to managing the river. Nearly all land-managing agencies require outfitters to pay fees (usually per person or a percent of gross revenues), and those are used to "recapture" some of the public value. Market-like mechanisms that allow some outfitters to increase their allocations at the expense of others (by using "shared pools" of allocation within the commercial sector; having outfitters lose unused allocations) also discourages inflation of the monetary value of access.

Another alternative is to allow unused commercial allocation to be used by other outfitters or within the non-commercial sector (a small version of a common pool). Dispersing un-used allocation could occur on a temporary basis (i.e., in that year only), or on a more permanent basis (once an outfitter fails to use part of an allocation, it could be forever placed in a common pool). These mechanisms essentially adjust allocation splits based on demand, so outfitters would have less certainty that they will be able to retain an allocation indefinitely if they don't use it. In essence, they prevent outfitters from holding allocations for speculative purposes.

Chapter 5. Primary distribution mechanisms

This chapter reviews six mechanisms for allocating use (pricing or price-based auctions, reservations, pure lotteries, weighted lotteries, queuing, and points-based auctions). It includes sidebars on "mixing mechanisms" and "allocating use among outfitters in a split allocation system."

Pricing and price-based auctions

Nowadays people know the price of everything and the value of nothing.
Oscar Wilde

Pricing is the most familiar mechanism used to allocate resources in market economies. In the simplest terms, a market adjusts supply or price until supply equals demand. In the case of river access supply is often limited by the carrying capacity. Theoretically, when demand is great, the price rises until those unwilling or unable to pay withdraw from the market.

Public outdoor recreation and river resources are generally not allocated through market-based pricing (particularly in the non-commercial sector). For most multi-day river trips, access is conceptually considered a "public good" which is not reserved only for those willing and able to pay the highest price. The general "national park or public lands" concept runs counter to the notion that such goods should be "commercialized," even though there are also long traditions of allowing some commercial activities (and market-based pricing) in these settings.

Examples of permits or concession-type contracts that allow such market-driven activities on public land include ski areas on Forest Service land and lodges at National Parks. Some campgrounds on public land also operate in quasi-markets where fees may play some role in allocating use, although pricing practices and goals are complex and vary by agency and location (Loomis & Walsh, 1997).

Market ***pricing*** is a major component of ***commercial allocations in split systems.*** It is usually combined with reservations because price alone does not perfectly limit demand to available supply (an outfitter's allocation). Conceptually, small business economics suggests outfitters should offer prices that "clear the market," ensuring that they spend minimal effort responding to demand that they cannot meet. However, their prices are sometimes limited by agencies that use concession or commercial license regulations to constrain prices and ensure a "competitive market result" in a monopolistic market structure (Loomis & Walsh, 1997). It is outside the scope of this report to review policies or regulations (which vary by agency and area) or their effects on outfitter price structures. As discussed in the sidebar at the end of the last chapter, decisions to employ a split allocation approach and grant access to outfitters (rather than employ a bid-prospectus system to recover the value of allocations), ensures that a pricing component will be present on the commercial sector side.

However, pricing also could play a role in the ***non-commercial sector of a split system*** or a common pool. ***Price-based auctions*** could: 1) allocate a portion of the non-commercial permits through an auction; 2) recover some costs of administering the permit system and lower fees for other users; or 3) assist with overall river management costs).

Price-based auctions are sometimes used in wildlife management. Non-profit game conservation organizations (e.g., Rocky Mountain Elk Foundation, Foundation for North American Wild

Sheep) have worked with state game agencies to fund wildlife management efforts by auctioning a few permits each year for high demand hunts (Scrogin, Berrens, and Bohara, 2000). The permits are sold at auctions, and prices for some permits exceed $200,000 (e.g., the average bid for a Montana big horn sheep permit is $149,000 over the past 20 years).

For very high demand rivers (e.g., Grand Canyon, Middle Fork Salmon, Selway), a similar program might offer a small number of permits (e.g., one to five per year) through an internet-based auction. The permit could be awarded to the highest dollar bid, which could be from an individual, a group, or commercial outfitter. Trip(s) could then be conducted as commercial or non-commercial, as long as they met other regulations for type of trip, trip size, and trip duration. To the extent allowed by state or federal laws, revenue from the permit auctions could then be used to administer other aspects of the permit system, to support resource management in the river corridor, or to reduce fees for other users. We think auctioned permits might generate bids of $10,000 to $20,000 for some trips (depending upon the river, number of permits available, and odds of securing a permit through other mechanisms, etc.).

Advantages

- ***Encourages users to prioritize their values.*** Pricing in the commercial sector presumably selects passengers who place a higher value on river trips. Priced-based auctions in the non-commercial sector would provide a ***small*** number of permits (e.g., 1 to 5 per year) to those who place high value on trips (with little effect on those unwilling or able to pay the high bids).
- ***Requires users who want access to pay for it.*** Pricing would help off-set the cost of providing river management, rather than having taxpayers subsidize the pursuits of river runners.
- ***Provides information about the value of a river trip.*** A pricing-based auction would provide some real information about the value of this otherwise non-market good. Resource economists are likely to be interested in outcomes from such auctions, which might help estimate economic value of recreation opportunities and suggest data-based permit or concession fees.

Disadvantages

- ***Discriminates against the less wealthy.*** The currency in a pricing mechanism is money, which is not distributed evenly through society and some would say should not be used to distribute public goods.
- ***Those who pay the most may not value the resource most.*** The ability to compete in a pricing system may not be correlated with people who value trips.
- ***Likely legal hurdles.*** It does not appear that federal agencies can sell permits through auctions, although wildlife hunting examples suggests that some government agencies have developed a system that meets legal scrutiny.
- ***Commercializes river running opportunities.*** A permit auction is likely to strongly link money and the river running experience, and some would say a "public resource shouldn't be sold." This is an issue in the commercial sector, and many stakeholders may balk at developing this connection in the non-commercial sector.

Reservations

I'm planning to be spontaneous tomorrow.
Steven Wright

Aside from pricing, reservations are one of the most common ways scarce goods are distributed in modern life. Reservations are a kind of first-come/first served queue, where being "first in line" gives priority, but the queuing is done "virtually." Reservations are used to ration seats on airplanes and at performances, and for space in hotels and restaurants – they are, by far, the most common way that scarce goods are distributed in the travel industry. While the details of these systems vary widely, they all place a premium on advanced planning**.**

Reservation systems have been used to ration backcountry permits or public use cabins, and are a component in the allocation of passenger space on commercial river trips. For non-commercial river trips, reservations are less common (see Chapter 7), despite being well-accepted by users (Shelby et al., 1982; see also Chapter 9).

There are many issues involved in developing a reservation system. Detailed reviews of each issue are beyond the scope of this report, and interactions between them can produce very different consequences. Additional information on these topics is provided in Shelby & Digennaro (1995).

- ***Use control period:*** When would use be limited? Most systems apply reservations to an entire use season, but they could be used for shorter periods (e.g., high use days based on past use as on the Lower Deschutes, weekends only on the Lower Youghigheny). The main trade-off is complexity (if the control period is limited) vs. over-regulation (limits may not be needed on all days).
- ***Opening date:*** When will reservations be taken? Systems can offer reservations year round, but some open six months (or less) before the first available dates. There are administrative costs for longer open periods, as well as repercussions on cancellation and no show rates if dates are out of sync with user planning horizons. The Lower Deschutes offers "multiple opening dates" where some reservations are available a long time (e.g., six months) ahead, while others are available closer to the date (e.g., two weeks, two days). Such systems can serve those with longer and shorter planning horizons.
- ***Reservation mode (sometimes labeled accessibility):*** How would reservations be taken? Walk-in, phone, and internet options are the major choices. Administrative and "show up" costs are typically highest for walk-in access, while phone and internet access are more convenient. The trend is toward internet-based reservations, but this reduces the "interface opportunity" between agencies and users, and may have other implications such as "no shows" (see sidebar in Chapter 6).
- ***Reservation policy:*** Would permits be offered to groups or individuals? Requiring individuals to name everyone in a group reduces "speculative trips" but is more cumbersome for agencies and users. In the travel industry, it is common to name "some" people (e.g., the head of the family, one person for a hotel room) but not everyone. Offering trips to a single trip leader minimizes transactions, matches how people plan trips, and allows flexibility (for trip members and alternate trip leaders).
- ***Transfer policy:*** Can permits be transferred to others? Non-transferability reduces permit trading, speculation, and the creation of a secondary market, but is less flexible for users. Transfers have the potential to create value in the permit (which could be sold).

- ***Reservation fees and terms:*** How much would a reservation cost and could people make more than one at a time? Limiting transactions or the number of reservations available at one time creates greater opportunity for others, but may not fit with a river where people take multiple trips per season (e.g., Deschutes, Arkansas). There are also administrative costs for tracking multiple reservations.
- ***Confirmation policy***: Is confirmation required, and if so, when? This requirement could minimize no shows and increase the number of permits available in a secondary system (which can benefit short-term planners). The trade-off is limited flexibility for users, plus increased administrative costs.
- ***Cancellation policy:*** Would there be refunds of reservation fees, or penalties for failing to cancel? Refunds require greater administrative effort, and may complicate the system. But keeping fees may penalize people who "legitimately" cancel a trip or encourage people to "no show" rather than cancel (which works against efficient use of the total allocation).
- ***No show policy:*** Would there be penalties for not using a reservation? This can discourage "no shows," but has administrative and enforcement costs.
- ***Waiting list policy:*** Would there be a list and how will it work? Short-term waiting lists allow the agency to notify users as cancellations or other permits become available, but there are administrative costs. Multi-year waiting lists allow users to "stand in line" over the long term, which can have a variety of consequences (see case study on the Grand Canyon waiting list in Chapter 8).

Advantages

- ***Any applicant can get a chance to go (sometime).*** Lotteries do not guarantee an applicant will ever obtain a permit, but a reservation system allows anyone to reserve a date (although it may be far in the future).
- ***Efficient and considered fair (when demand and supply are in balance).*** When supply is similar to demand (and reservations are not made too far out in front of when people would use them), reservations assure applicants of a permit and a relatively short wait. When demand substantially outstrips the number of permits, the planning horizon needed to successfully compete for a permit can become "unreasonable." People make reservations not knowing whether they will be able to conduct the trip when the time comes, leading to speculation and higher numbers of cancellations and no shows.
- ***More control over scheduling.*** Reservations provide greater control over scheduling a preferred date than lotteries (where they may have to list more than one).
- ***Flexible applicants can get permits.*** Some believe that reservations may lead to higher cancellation rates, but cancellation policies and secondary distribution systems can make those available to others (see Chapter 6). In addition, limited examples suggest reservations lead to lower cancellation rates. On the Green through Desolation the cancellation rate went from over 50% (under a lottery system) to less than 5% with a new reservation system (Willis, personal communication, 2007).

Disadvantages

- ***Understandability issues.*** Depending upon the details, reservation systems can be complex to manage or use. Each rule change or system nuance may be designed to address specific problems, but can be unwieldy.

- ***Too complex.*** Tracking users, multiple releases of dates, fees, confirmations, and cancellations are cumbersome and require sophisticated administration systems. Based on the experience of the Lower Deschutes, start-up costs for such systems can be high, but once they have been developed and "de-bugged," web-based software should minimize long-term costs.
- ***Long waits prevent realistic trip planning.*** The further ahead one needs to make reservations to assure a trip, the less realistic trip planning will be. Maintaining multi-year waiting lists (or taking reservations years in advance) was a failure in Grand Canyon (see case study in Chapter 8) and has been discontinued. Other rivers (e.g., Green in Desolation, Westwater) have also jettisoned waiting lists (although these operated within a single season only – were not carried over from year to year).
- ***Long waits favor less spontaneous users.*** Reservations and waiting list systems favor those who can plan ahead at the expense of those who are more spontaneous (although secondary distribution systems can be developed to provide a substantial allocation to spontaneous users).
- ***Onerous or punitive rules.*** Layers of policies to minimize the number of people who might otherwise "work the system" may create onerous rules and bureaucracies. To the extent these are only applied to non-commercial users, they are an unequal burden (commercial users do not face most of these rules).

Pure lotteries

Lottery: A tax on people who are bad at math.
Ambrose Bierce

Lotteries are the "classic" non-market mechanism for allocating scarce resources when equality is the goal and the commodity cannot be subdivided. In a pure lottery, each individual receives an equal chance to obtain the commodity, in this case a permit to run the river.

Pure lotteries are the most commonly used rationing mechanism on multi-day rivers (at least 13 rivers employ pure lotteries to distribute their permits; see Chapter 7). Most require prospective applicants to compete during the winter for specific dates in the following summer/fall.

Lotteries generally "encourage" all the prospective members of a group to apply (assuming the fees are not too onerous), because more entries create better odds. Boaters have been known to organize "permit parties" to complete applications and strategize about preferred dates, which can create excess cancellations if more than one in the group is successful. With a pure lottery the probabilities of success are not modified by past success or other variables, and users re-apply each year.

In addition to several issues described for reservations, lottery mechanisms must include decisions about:

- ***Application period and drawing date.*** Analogous to reservation opening dates, these decisions define when people can apply and when the drawing will be held. Application dates farther from trip date increase planning horizons, limit spontaneous users, and increase cancellations and no shows.
- ***One vs. many lotteries.*** A lottery could choose winners from the entire pool of applicants and then give preferred dates to them. But most river lotteries operate as "mini-lotteries,"

where applicants that apply for each date compete for that date. There is usually a single lottery for the year (most common), but it is possible to have several lotteries spaced throughout the year covering shorter periods (so they occur closer to the trip date).

- ***Individual vs. group applications.*** As with reservations, allowing one person to represent an entire group decreases administrative efforts. However, multiple applications from a group increases the chances of obtaining a permit.
- ***Lottery application mechanics.*** How will applicants apply (paper, phone, internet) and how will the agency choose winners in a random but equitable way (choices range from "cards from a hat" to electronic random number generation)?
- ***Fee, confirmation, and cancellation/no show issues.*** There are similar issues to those discussed for reservations (see previous section).

Advantages

- ***Lotteries are in common use.*** Lotteries have long been used to allocate game hunting permits, and are the most often-used system for multi-day river permits. However, they are relatively rare in the travel industry (e.g., for hotel rooms, flights, or access to popular sights), where reservations are dominant. Lotteries on rivers have withstood legal challenges, are generally considered a "fair" non-market mechanism, and are well-understood and easy to explain.
- ***Lotteries serve equality goals.*** By definition, "*pure*" lotteries give equal consideration to all who apply.
- ***Lotteries can handle group applications.*** It is possible to have a lottery to handle group rather than individual applications (thus minimizing multiple applications), although most agencies do not.
- ***Pure lotteries are less administratively challenging.*** Pure lotteries can handle a large number of applications, and computers can easily randomize the choice of successful applicants. This makes them easy and cheap to administer, particularly if applicants enter data electronically.
- ***Lotteries favor those who can plan ahead and organize their group.*** Lotteries put a premium on organizing groups in advance of the application deadlines, and strategically choosing dates that are: a) desirable for your group and b) undesirable for other competing groups.

Disadvantages

- ***Pure lotteries give no advantage to those who have been unsuccessful in the past (or haven't been down a river recently).*** An idealized "equity" goal may suggest that people who have been trying unsuccessfully to obtain a permit should have improved chances over those who have taken a trip recently (a weighted lottery can accomplish this; see below).
- ***Lotteries discourage spontaneous use.*** Because they must be held in advance of the launch dates to give time for people to organize trips, lotteries put a premium on advance planning and discourage "spontaneous" use. Releasing a proportion of permits through a secondary system can address this issue (see Chapter 7).
- ***Perceived chances of success are lower with pure lotteries.*** Pure lotteries provide few variables that users can control to improve their chances. A study of backpacker and river runner permit system preferences suggests reservations and pricing were preferred over

lotteries and on-site queuing, apparently because users felt they had more ability to control their chances (Shelby et al, 1982).

- ***Poor odds in a pure lottery.*** Odds of success are low in lotteries for high demand rivers like the Selway and Middle Fork Salmon. Based on the 3% "success rate," a single person applying for a Middle Fork or Selway permit would get a permit about once every 30 years (although many groups may submit several applications, improving their group's odds).
- ***"Over-applying" and "lottery synergy."*** Lotteries may become "a game unto themselves" possibly creating a synergy among potential river runners that leads them to apply for more trips than they realistically plan to take (Willis, 2008). One potential scenario is for a group to apply to many rivers for the same vacation week and draw more than one permit, causing them to cancel all but one.

Weighted lotteries

With weighted or modified lotteries, probabilities are altered to better meet "fairness" goals. The logistics of a weighted lottery are similar to a pure lottery, with the exception of the weighting system. A weighted lottery system could increase the odds for previously unsuccessful applicants, or weights could be given for other applicant characteristics (e.g., groups willing to take shorter trips, go in smaller groups, or those who had not been down the river recently) to address other management goals.

Advantages

- ***Weighted lotteries have been used in natural resource settings.*** Most rivers have pure rather than weighted lotteries. But several wildlife agencies consider past success or "points" systems based on other hunter characteristics, and bear viewing at Alaska's McNeil River has used a type of weighted system in the past (see case study in Chapter 7). The Grand Canyon also uses a weighted lottery, although it may be a couple of years before the range of effects will be understood and can be evaluated (see case study in Chapter 7).
- ***Weighted lotteries serve "fairness" goals.*** A weighted lottery increases odds for specified applicants in order to be "more equitable or fair" than a pure lottery.
- ***Weighted lotteries can handle group applications.*** It is possible to design a lottery to handle a group rather than individual applications, thus minimizing multiple applications.

Disadvantages

- ***Weighted lotteries discourage spontaneous use.*** As with pure lotteries, weighted lotteries put a premium on advance planning and discourage spontaneous use. Releasing a proportion of permits through a secondary system can address this issue.
- ***Group composition pressures.*** A weighted lottery that awards permits to groups (e.g., the current Grand Canyon system for boaters that were on the multi-year waiting list) puts a premium on forming groups with other people who have been unsuccessful in the past. This may affect the composition of applicant groups, shifting to groups cobbled together based on "wait points." Private boater websites have formed to facilitate these group-forming efforts, possibly creating "non-commercial tour trips" consisting of people who do not know each other very well. The social dynamics in these groups differ, which may affect trip impacts or safety.

- ***Administration challenges.*** "Weighting" applications is more complex and more difficult to explain to users or develop among managers. Specific details are beyond the scope of this report, and include privacy concerns (tracking by identification numbers). Case studies for Grand Canyon and McNeil River in Chapter 7 offer some options.

Points-based auctions

A "points-based auction" is a mechanism where people earn "waiting points" for the length of time they are registered, and the points become a form of "currency" that can be used to "bid" for permits. Groups having people with more time on the registration list are more successful than groups with less time. The concept was conceived by non-commercial boaters interested in overhauling Grand Canyon's waiting list system, and further developed through the 2003-2006 planning process. The concept has been incorporated into the transition options from the Grand Canyon waiting list to the new weighted lottery system. A broader conceptual points-based auction system is described below.

- "Waiting points" are earned by ***individuals*** for each year they applied but did not take a trip. However, applications for permits are made by ***groups*** (a roster of trip participants). Members of a group pool their collective waiting points to compete for a permit.
- Points-based auctions are compatible with a common pool or within the non-commercial sector of a split system.
- Groups compete for specific dates in a certain time period. Comparisons occur for each date in sequence, and the group with the highest number of points is offered a permit. After they receive an offer they no longer compete for any other date (and their "points" are "spent"). Individuals who bid with groups but fail to obtain a permit continue to accumulate points for future bids (but groups can change in future years).

Advantages

- ***Favors those who have been registered longer.*** This recognizes the equity goal of providing a greater share of permits to those who have been unable to get on the river.
- ***Favors users who can "network" better.*** People organizing others who have been waiting a long time will be more successful.
- ***May serve efficiency goals by increasing trip size averages.*** Because groups with more points can bid more, this system encourages larger group sizes. This maximizes the number of people going down river for a specified number of launches.

Disadvantages

- ***Pressure to increase group sizes.*** Points-based auctions tend to increase group sizes, because groups with more people can amass more points. This may work against other management goals (larger groups may have greater resource or social impacts) or desired experience quality (large groups may have different social dynamics and personal benefits).
- ***Group composition pressures.*** A points-based auction encourages forming groups with other people who have been waiting a long time, which may affect group composition (see discussion for weighted lotteries).
- ***Greater complexity and cost.*** A points-based auction system is necessarily complex. At a minimum, it must track information about those who register but remain unsuccessful, raising privacy concerns. Electronic programs can handle this, but it is not simple.

Queuing or first-come/first-served

Time is the scarcity, and it's the commodity we can't create any more of.
Jim Mitchell

An "on-site" first-come/first-served queuing system is common in modern life (e.g., at the grocery store check-out or ice cream shop) and in many recreation settings (e.g., at ski lifts, amusement parks, or entrance stations to parks). However, most of these "lines" form at facilities where the wait is likely to be short and potential users can judge waiting time and their willingness to wait. Many river settings require time and effort to get to the site and information about "queue length" and chances of success are probably unavailable.

Several recreation programs use a first-come/first-served system (e.g., backcountry permits in Yellowstone, Glacier, or Denali) with queues at backcountry offices at park gateways or nodes. In general, a limited number of permits are offered for different zones or campsites, and users queue up a short time in advance (e.g., 24 or 48 hours).

On rivers, queues are rarely employed as a primary distribution mechanism, but they are often part of the secondary system (where cancelled or no show permits are available to those who are waiting). Queues usually form at agency offices, although in some cases (e.g., McCloud River Preserve, Lower Youghigheny) they occur at the river.

Advantages

- ***Favors those who live closer to the river.*** Queues serve idealized equality goals because theoretically everyone has equal amounts of time to spend in lines. However, those who live closer spend less of their time getting to the queue.
- ***Favors those with more "free" time.*** Those with less structured lives (e.g., those with flexible work or school schedules) may have time or be more willing to spend it traveling to or standing in lines (Schomaker & Leatherberry, 1983).
- ***May provide benefits to a local economy.*** In places where people remain in an area for several days to participate in queues, their additional expenditures could provide a modest economic boost (Robertson, 2003).

Disadvantages

- ***Disfavors users that live farther from the river or have less "free" time.*** (For the reasons described above).
- ***Puts a premium on information about queue length.*** Decisions about whether to join a queue often rest on information about waiting time or chances for success.
- ***Requires users to travel to a queue without guarantees that they will be able to take a trip.*** Uncertainty is a problem with queuing systems. Most users do not want to prepare for a trip and travel and stand in a line that may not produce a permit. Such systems are better where the queue distributes higher demand space (e.g., a better launch time on the Lower Youghigheny, a more desirable segment on the Rogue), but alternatives are available for the unsuccessful.
- ***On-site administrative effort.*** An on-site queue requires administrative facilities and staff at a potentially remote location. Queues at agency offices are usually less remote, but they may have other trade-offs.

On mixing mechanisms

Most rivers use a single primary distribution mechanism, but some people suggest "mixing mechanisms" (allocating "blocks" of permits with two or more different systems to diversify who "wins" and "loses" under an overall program). Mixing allocation mechanisms is analogous to "optimal taxation theory," which advocates a balance of tax types (e.g., sales, personal income, corporate, and property) to provide economic stability and minimize impacts on one specific group.

A "mixed system" specifically refers to multiple primary distribution mechanisms. A different secondary distribution mechanism to distribute unused permits (cancellations and no shows) can be used to accomplish similar "diversification" goals.

The primary downside of mixing mechanisms is complexity of the overall system, with greater administrative costs for agencies and more complex procedures for users. If a mixed mechanism system is proposed, simplicity and understandability are particularly important.

Some mechanisms mix better than others. Without reviewing the full matrix of choices, two "mixes" appear likely to be complementary:

- ***Price-based auctions with reservations or lotteries***. Price-based auctions are designed to allocate a few permits to help pay for other parts of a relatively expensive allocation system. This is likely to be more successful for longer, high-demand "iconic" river trips like the Grand Canyon or Middle Fork Salmon, where bid prices would be higher.
- ***Queuing with reservations or lotteries.*** Reservations or lotteries primarily favor those who can plan ahead, while queuing favors more spontaneous users, those with less structured lives, or those who live close to the river. Mixing these mechanisms provides "alternative paths" for different types of users.

In contrast, a couple of mixes are less likely to be complementary:

- ***Weighted lotteries or points-based auctions with pure lotteries.*** Weighted lotteries and points-based auctions serve equity goals (to favor those who have not been successful in the past) and run counter to the equality goal of a pure lottery. All of these systems allocate permits well in advance of trips, which do not favor spontaneous users.
- ***Lotteries and reservations.*** Both place a premium on planning, so combining does not diversify benefits to different groups.

It is also possible to "mix" split and common pool approaches by developing a split system but with a third allocation dedicated to a common pool. Rivers that allow cross-sector use of cancellations is a smaller version of how these mixes might work, but to be effective they would need to grow to about 30 to 50% of all use. "Partial common pools" could be used to transition between a split and a full common pool approach (allowing the common pool to grow as commercial or non-commercial allocations are not used or when commercial permits come up for availability), or applied for certain parts of the year (e.g., for winter and spring launches in Grand Canyon) to explore how well they work.

Allocating use among outfitters in a split system

There are challenging issues related to allocating use among outfitters in a split system. This includes deciding which outfitters will get a permit and the amount of use that will be allocated to each permit holder. Most allocations to outfitters are initially based on historical use. As use shifted, outfitters sometimes "sold" their allocations, or other schedules or trips changed, so agencies developed more sophisticated ways of allocating and scheduling outfitter use. A few observations about these mechanisms and what they accomplish follow:

- ***The level of oversight depends on river and trip characteristics.*** If commercial trips are more homogenous in terms of length and season (e.g., day trips on a high density river), allocations are relatively simple (e.g., launches per day) and less oversight is necessary. But if outfitters compete for higher demand times or offer trips of different lengths and sizes, more agency control of the process may be appropriate.
- ***Fewer outfitters reduces complexity.*** Some rivers have few outfitters (e.g., the Chattooga has three) while others have many (e.g., the Lower Deschutes has over 100). Regardless, the number has implications for allocation scheduling. It is easier to schedule trips when the "bidders" are fewer and have histories with each other. As the number increases, more sophisticated systems for bidding dates may be needed (e.g., on the North Fork American, outfitters bid in order through three rounds).
- ***Annual scheduling meetings.*** If the number of outfitters is relatively small (e.g., under 15 or so), annual face-to-face meetings can be a very effective tool for scheduling. Some of these are organized by agencies (e.g., North Fork and Middle Fork American) while others have been internal to the commercial sector with less agency oversight (e.g., Grand Canyon before the recent Colorado River Management Plan).
- ***Utilization policies.*** Most systems assess whether outfitters use their allocations from year to year. On some rivers, outfitters that do not use a certain proportion may lose some of their allocation in future years (temporarily or permanently). This discourages "holding" an allocation for its "windfall" value and makes unused space available to other users (other outfitters or in the non-commercial sector). These policies are challenging on rivers where use levels fluctuate widely from year to year because of weather, flows, fires, and outfitters have strongly advocated for regulations that average utilization over multiple years.
- ***Flexibility policies.*** Some systems allow informal launch "date trading" among outfitters to reduce inefficiencies and promote flexibility. The trade-off is that outfitters gain additional control over access rights and trip scheduling, which may encourage secondary markets (where outfitters trade dates for money).

The Nature Conservancy Preserve on the Lower McCloud River, California operates a "10 anglers at one time" capacity that is allocated through a combination reservation and "walk-in" queuing system.

6. Secondary distribution systems

This chapter covers systems for re-distributing unused permits from cancellations or "no shows." It begins with the steps for designing a secondary distribution system. It then focuses on specific distribution mechanisms, including waiting list notifications, supplemental auctions or lotteries, call-in or internet reservations, and on-site queuing. A sidebar addresses philosophical issues and unintended consequences of elaborate systems that may be "over-focused" on the "business" of permits.

Cancellations and "no shows" are inevitable under most permit systems. Reasons include natural phenomena (e.g., weather, flow levels), participant health (e.g., a trip leader or boat operator becomes sick or injured), logistics snafus (e.g., vehicle break down, equipment damage, shuttle coordination), or changes in priorities or schedules. The issue is how to handle them.

There are two challenges in designing a secondary distribution system. The first is understanding the frequency and timing of cancellations and no shows, then encouraging users to inform agencies when they are not going to use their permit (which frees it up for others). The second focuses on distribution objectives (e.g., full utilization vs. serving equity goals) and mechanisms for meeting those objectives.

Encouraging "cancellation notification"

Agencies have several "carrots" and "sticks" to ***encourage users to return their permits*** as soon as they decide they will not use them. Potential "carrots" include:

- ***Full or partial fee refunds.*** Assuming user fees have been paid upon receiving the permit, a graduated refund schedule provides incentives to cancel as soon as permittees know they can't take the trip (Willis & Swanson, 2000). Cut-off dates should be linked to reasonable planning horizons (so new permittees will have enough time to organize a trip). However, based on limited discussions with travel industry representatives, most fees are too low for a refund to provide a "useful carrot" (cruise ship and resorts require several hundred dollars in "upfront" money) (Willis, 2008).
- ***Full or partial "points refunds."*** If the primary system uses a weighted lottery or points-based auction, the points used to obtain the initial permit might partially be restored on a graduated scale (again linked to planning horizons).
- ***Deferred trip dates.*** Agencies can offer a permittee another date in the future if they cancel with sufficient time.
- ***Access to the secondary system for another date.*** Instead of guaranteeing a new trip date, permittees that cancel early enough can be offered access to the secondary system that disposes of other newly available permits (giving them some hope they can reschedule).

Potential "sticks" include:

- ***Penalty fees.*** Agencies can assess penalty fees that are charged if you cancel after a certain date. (Note: these may not be legal from a public agency, although they are common in the travel industry and might be developed within agencies as a "performance bond.")
- ***"Bad user" lists.*** Agencies can track users who cancel or no show, and sanction them if they re-apply for a permit (e.g., no show users cannot apply for a permit for one year). Penalties can be graduated to encourage users to notify agencies as early as possible. Because "bad

user" lists rarely prevent a person from taking a trip (they just prevent a person from being a permit applicant), this "stick" is unlikely to be very effective.

Some users will be interested in "forgiveness" for "reasonable excuses." Agencies generally apply their professional judgment when assessing these claims, but American Whitewater has suggested developing a panel of private boaters ("a jury of one's peers") to pass judgment (Robertson, 2003). Regardless of the mechanism, the goal is encourage people to "do the right thing" by notifying agencies as soon as they need to cancel a trip, not punish users legitimately unable to follow through with trip plans.

Secondary distribution objectives

Secondary systems can be designed to meet different management objectives. One issue is whether the system should try to maximize use of permits, or try to decrease crowding or other impacts by not reallocating cancelled permits. A second issue is whether the system should increase opportunities for specific types of users (e.g., those unsuccessful in the primary system, "spontaneous users," or other identifiable groups). These two objectives are examined below.

Maximizing utilization vs. decreasing impacts

Some agencies are committed to allowing as much use as their capacity allows. They actively encourage full utilization through multiple user-friendly contacts, flexible rules (e.g., allowing unused space in one sector to be used by another, allowing users to trade schedule dates), or "overbooking" trips. The objective of this strategy is to increase opportunities while still honoring the capacity. The disadvantage is that capacity is reached a higher percentage of the time. If a capacity defines the point when acceptable conditions become unacceptable, full utilization ensures near-marginal conditions more often.

An alternative is to let the cancellations and no shows occur at a higher rate to improve the quality of experiences for those who get on the river. To the extent that trips are cancelled and are not replaced, others will have fewer encounters and less competition for campsites. However, with good information about cancellation rates and use-impact relationships, agencies may be able to strike a balance between utilization and limiting impacts.

Specific mechanisms that fully utilize an allocation depend on the character of the river, users, trips, and the timing of cancellations. In general, multiple methods for users to "pick-up" cancelled or no show best achieves full utilization. In contrast, "overbooking" may work well if cancellation rates are uniform and predictable, but it can create over- or under-utilization if those are more variable.

Targeting specific user groups

With the frequency and timing of cancellations understood, the issue shifts to developing "fair" ways of distributing them. A secondary mechanism can complement a primary system (e.g., by targeting unsuccessful applicants) or serve other goals (e.g., equality). In most cases, the goal is to develop secondary systems that provide "alternate paths" to permits, thereby avoiding a "single way" system that favors certain types of users.

Mechanisms

There appear to be four basic types of secondary distribution mechanisms, each of which has implications for utilizing allocations and targeting specific user groups. The following describes concepts and lists major advantages and disadvantages.

Waiting lists (with agency notifications)

Agencies at several rivers used to keep annual waiting lists of lottery applicants that were unsuccessful. The idea was to notify people when cancelled permits became available (before cancelled permits were made available to a wider public). Because cancellations rates for these lottery systems commonly exceeded 50%, many permits were often available. These waiting lists were usually "cleared" by the end of the season (but not carried over). Annual waiting lists were distinct from the multi-year waiting list operated in the Grand Canyon (where demand was substantially higher and was not met in any given year, thus lengthening the list each year).

When cancellations are rare and the number of unsuccessful applicants is small, it is reasonably efficient to fill cancellations from this list. In most cases, agencies notified people by phone, offering "personalized" service. But as the number of unsuccessful applicants increased, the agency administrative burden increased also, and many people on waiting lists didn't accept permits that became available. In response, most of these programs have been discontinued (Willis & Swanson, 2000), and the few that remain (most notably Hells Canyon and the Salt River) allow people to remain on a waiting list for a single date only (minimizing agency effort to notify many on a waiting list about an opening).

Advantages

- ***Ability to distribute cancellations on short notice.*** Agencies can begin soliciting prospective permittees as soon as they know about a cancellation, and are not required to "track" availability.
- ***Creates low burden on users.*** The agency assumes responsibility for notifying potential new permittees, who simply respond to an offer.
- ***Transparent benefits to primary system applicants.*** The system rewards those who applied in the primary system, and highlights the primary system as the main gateway to a permit.

Disadvantages

- ***Substantial administrative costs.*** Agency responsibility for notification is a greater administrative burden than when users contact the agency.
- ***Inefficient focus on users less interested in short planning horizons.*** People who apply to primary systems are likely to have longer planning horizons and be less spontaneous. This makes them less likely to use cancellation permits which become available. Some cancellations may not be re-filled, which works against full utilization.
- ***Fails to complement the primary mechanism.*** Reserving cancellation permits for those who applied through the primary system does not provide an alternate path to permits. As Willis & Swanson (2000) note, agencies using these systems tend to wait for people on the list to make up their minds about a cancellation, while others who are "ready to go" are not even asked.

Supplemental points-based auctions or lotteries

Points-based auctions, pure lotteries, or weighted lotteries are primary mechanisms that can be used to distribute cancellations though "supplemental" auctions or lotteries. The new Grand Canyon system attempts to offer all its launch dates in supplemental weighted lotteries. The agency notifies primary system applicants of the upcoming supplemental lottery, and those people can form groups to compete in the weighted system (which favors those who have not taken a trip recently or were on the old waiting list for many years). The timing for the supplemental mechanisms needs to fit with user planning horizons to be effective.

Advantages

- ***Uses the same mechanism as the primary distribution.*** If consistency is important, adopting the same system for cancellation permits makes sense; users and agencies can focus on a single set of rules.
- ***Favors people who have previously applied for a trip.*** The system rewards those who applied in the primary system, highlighting the primary mechanism as the gateway to a permit.
- ***Supplemental lotteries or auctions can be crafted to serve equity goals.*** Operating weighted lotteries or points-based auctions allows agencies to favor users who have been unsuccessful.

Disadvantages

- ***Poor ability to distribute cancellations on short notice.*** Auctions and lotteries require more lead time for agencies and users, discouraging participation on short notice. The problem is exacerbated on more logistically complicated rivers (e.g., Grand Canyon, Middle Fork Salmon). This mechanism also doesn't address no shows that occur on the day of a trip. This mechanism alone is unlikely to achieve full utilization.
- ***May involve substantial administrative costs.*** Supplemental lotteries are distinct "events," which require administrative effort. Although such lotteries can be semi-automated with internet interactions, supplemental lottery costs are probably comparable to call-in reservation programs (see below), which may still be needed to distribute "last minute" cancellations.
- ***Fails to complement the primary mechanism.*** Using the same mechanism as the primary distribution provides little diversity in the "path" to a permit. The most likely "losers" are spontaneous users with short planning horizons.

Call-in or web-based reservations

The most common secondary distribution systems make cancellations available by phone or web-based reservations. Agencies provide information about availability, and users are responsible for checking these and making reservations. In most cases, permits are awarded to individuals (who then organize the rest of their group).

Advantages

- ***Ability to distribute cancellations on short notice.*** Agencies can post cancellations as soon as they happen, and users can make reservations immediately after. The only constraint is staffing time for the call-in number (which web systems eliminate).

- ***Moderate administrative burden.*** Although call-in systems require some administrative effort (a dedicated line and staff), these can be limited (many agencies constrain them to weekday mornings). Web-based systems offer greater automation and lower costs (after set up).
- ***Systems can be crafted to serve other goals.*** Agencies can constrain who is eligible to participate, such as previously unsuccessful applicants or people who applied in the primary system. Grand Canyon's secondary system over the past decade offered earlier opportunity to those higher on the waiting list. If equality is preferred over equity, cancellation permits can be offered with no constraints.
- ***Offers a "permit path" for more spontaneous users.*** Although reservations in general place a premium on planning, cancellation permits generally have much shorter planning horizons.
- ***Relatively efficient administration.*** Although the system requires a separate phone line/web-page and announcements of available launches, easy-to-understand rules minimize calls until launches become available.

Disadvantages

- ***Unable to address no shows.*** As "nimble" as a call-in system may be, it is unlikely to fill a no show that happens the day of the launch, particularly at more remote rivers.
- ***Phone-based vs. web-based interactions.*** If a call-in system is used, there are costs to staff it. If a web-based system is used, personal interaction between agency staff and the user is lost.

On-site queuing

The final method of filling cancellation permits is on-site queuing (first-come/first-served). Identical to the method described under primary distribution mechanisms (see above); this is probably the most effective way to utilize "no shows," which occur the day of the launch. However, it generally works best for rivers that are: (1) not remote (minimizing the cost of users traveling to the queue without knowing if they will be successful); (2) have ample substitute activities (so users who fail to obtain a permit will have other things to do); and (3) have high cancellation rates (the queue moves fast).

The "business" of allocating use

The stump speech is familiar: A successful businessman promises to right the wrongs of government by "running it like a business." But what kind of business? Successful businesses vary in their ability to maximize sales, minimize costs, produce high quality goods, or provide the best customer service – and it is usually impossible to maximize all these goals at once.

The usual criticism of government targets "inefficiency" of bureaucracies, suggesting that programs involve too much "red tape" for users. Being "simple to understand" and "easy to use" are common goals for permit systems, possibly urging agencies toward centralized allocation systems. This might simplify the "rules," allow more automation, and provide economies of scale. But agencies should be careful about the trade-offs. Centralized, uniform systems can work against customer service, local knowledge, or responsiveness. A "business model" may also distract agencies from their primary objectives. Some worry that river managers spend too much time distributing permits and too little time thinking about how to provide high quality trips.

Concerns about "being fair" and making sure users don't "work the system" often lead to complex lists of incrementally-developed rules and penalties; these may sour agency relationships with the public. The goal is a system that pays attention to how users organize trips – their planning horizons, assembling a group, equipment needs, necessary flexibility, etc.

An accounting-type evaluation can measure the costs of permit programs or their efficiency in utilizing capacity. However, a "quality of service" evaluation is also important. River and recreation management was developed from a service-oriented philosophy that is in sharp contrast to the resource commodity models of timber and range management. Evaluating an allocation system should include both efficiency and quality of service.

7. River use allocation systems in North America

This section describes allocation systems on North American rivers based on agency documents, websites, and interviews. It includes summary information about:

- Number of rivers with allocation systems
- Allocation approaches
- What's limited?
- Primary systems
- Secondary systems
- Use limit seasons
- Lottery and reservation distribution schedules
- Private-commercial splits
- Trip leader policies
- Participant tracking
- Cancellation and no show policies
- Application fees
- User fees
- Success rates
- Group size limits
- Numbers of outfitters

Number of rivers with allocation systems

Information was initially developed from agency documents or websites for about 110 rivers that were known to have allocation systems (some in place, others in plans but not yet implemented), or appeared to be candidates for one. The goal was a complete survey of systems (although some may have been missed). Subsequent work suggested differences between "full" and "partial" allocation systems, discussed separately below.

Full allocation systems have distribution mechanisms for both private and commercial sectors. We have identified 25 full allocation systems on rivers in North America (Table 1), although this "count" depends on definitions of segments or systems. Most of this chapter focuses on these systems.

Table 1 lists the full systems by river, segment, mileage, and managing agency. Of these, 22 allocate boating, two allocate land-based fishing (Dukes Creek in GA, McCloud River in CA), and one allocates land-based bear viewing (McNeil River in AK). The BLM and Forest Service manage seven systems each, National Park Service manage five, with the remainder managed by other state and federal agencies, and the Nature Conservancy. Of the 22 boating-based allocation systems, all but the Youghigheny (PA) involve multi-day trips, although day trips are possible on the limited segments of the Deschutes (OR) and Tuolumne (CA).

Table 1. Full allocation systems on North American rivers.

River and State(s)	Segment	Miles	Lead Managing Agency
Alsek/Tatshenshini (BC, Can & AK)	Haines Jct./Dalton Post to Dry Bay	266	NPS & Parks Canada
Colorado River in Cataract Canyon (UT)	Green confluence to Lake Powell	44	NPS – Canyonlands NP
Colorado River in Grand Canyon (AZ)	Lees Ferry to Diamond Creek	226	NPS – Grand Canyon NP
Colorado River in Grand Canyon (AZ)	Diamond Creek to Lake Mead	51	NPS – Grand Canyon NP
Colorado River in Westwater Canyon (UT)	Westwater Ranch to Cisco Landing	17	BLM – Moab
Deschutes River (OR)	Warm Springs to Columbia	97	BLM – Prineville
Dukes Creek (GA)	Segment in Smithgall-Woods park	5	GA State Parks
Green River (UT)	Gray and Desolation canyons	84	BLM – Price
Karluk (AK)	Kodiak Refuge segment	22	USFWS – Kodiak
Kern River (CA)	Forks of the Kern	17	USFS – Kernville
McCloud River (CA)	Nature Conservancy Preserve	6	The Nature Conservancy
McNeil River (AK)	Bear viewing areas	2	AK Dept. of Fish and Game
Main Salmon (ID)	Wild segment (Corn Ck to Vinegar)	79	USFS – North Fork
Middle Fork Salmon (ID)	Boundary Creek to Cache Bar	99	USFS – Challis
Rio Chama (NM)	Overnight segment	32	BLM – Taos
Rio Grande (NM)	10 segments, including Taos Box	80	BLM – Taos
Rogue (OR)	Wild segment: Graves Ck to Foster	34	BLM – Grants Pass
Salt (AZ)	Gleason Flat to Roosevelt Reservoir	52	USFS – Globe
San Juan (UT)	Sand Island to Clay Hills	84	BLM -- Monticello
Selway (ID)	Paradise to Selway Falls	47	USFS – West Fork
Smith (MT)	Camp Baker to Eden Bridge	59	MT Fish, Wildlife & Parks
Snake in Hells Canyon (ID/OR)	HC Dam to Pittsburg Landing	72	USFS – Clarkston
Tuolumne (CA)	Lumsden to Wards Ferry	19	USFS – Groveland
Yampa / Green in Dinosaur National Mon.	Deer Lodge/Lodore to Split Mountain	115	NPS – Dinosaur Nat. Mon.
Youghigheny (PA)	Ohiopyle to Bruner Run	7	Pennsylvania State Parks

Partial allocation systems refer to rivers where only some types of use are limited, or some aspects of an allocation system have not yet been implemented. In most cases, partial systems have ***commercial limits only***, usually on the number of outfitters and some aspects of their trips (e.g., the number of trips, people, or user-days in a certain period). Partial systems typically do not limit non-commercial use (because such limits have not been defined, or non-commercial use

is low and has not exceeded defined capacities). In other cases, neither commercial nor non-commercial use is limited because use remains below capacities, but agencies have developed ***potential systems*** that will be employed if needed.

Table 2 lists 40 ***examples*** of partial allocation systems. Among these, 30 have "commercial-only" systems in place but non-commercial use is not limited or has not reached its limits yet. Ten ***example*** "potential systems" have limits in one or both sectors, but limits have not yet been reached and allocation systems have not been implemented.

Both lists in Table 2 are illustrative rather than exhaustive. For these rivers, we focus on basic information to characterize variation among partial systems, but more extensive analysis was beyond the scope of this report.

The survey also identified about 30 other rivers where the number of commercial outfitters is limited, but use levels are not. These may be candidates for allocation systems in the future, but it was beyond the scope of this document to focus on managing commercial uses outside the purview of a capacity/allocation system. Even so, Appendix A provides brief notes about all the partial and potential allocation rivers surveyed.

Allocation System Survey Disclaimer

All of the information summarized in this chapter was based on available documents and interviews collected in 2006-2007, and some caveats apply. First, information about allocation systems is not standardized, and there is diversity in how different agencies and rivers have developed systems, labeled characteristics, or kept track of use, applications, and success rates. To make useful comparisons, we have used judgment in categorizing parts of their systems or analyzing available data about the use those systems produce.

Second, we have tried to provide the latest information for each full system, but the "latest year" varied by river. In addition, external factors (e.g., fires, flows) may have affected use or participation in a system for a given year), in which case a more "typical" recent year was used. Readers should recognize that one-year statistics (e.g., use levels, actual splits between sectors, applications) are "snapshots" rather than multi-year averages. The goal was to show how these systems generally work and how they affect use or compare to each other, not provide comprehensive detailed information for individual rivers.

Third, information in this report may become outdated over the years. Use will vary from year to year, and system characteristics may also change (particularly nuances regarding how to apply, and fees.). A data base developed as part of this report will allow future updating.

Taken together, these caveats urge readers to focus on concepts rather than the details of any particular system described in this summary. Appendix A provides additional information about individual systems. A comprehensive understanding of any individual system requires more extensive review than can be provided here.

Table 2. Example partial and potential allocation systems on North American rivers.

Commercial limits only (no non-commercial limits or no implemented non-commercial limits)	"Potential" systems (some defined limits or allocation decisions, but systems have not been fully implemented)
Arkansas, CO	Bruneau/Jarbidge, ID
Animas (Upper), CO	Delta River, AK
Chattooga, GA/SC	Dolores River (Gateway reach), UT
Cherry Creek (Tuolumne), CA	Gulkana River, AK
Cheat, WV	Illinois River, OR
Clackamas (Three Lynx Reach), OR	John Day River, OR
Dead River (ME)	Owyhee, ID
Gauley, WV	Rio Grande in Big Bend, TX
Goodnews River, AK	Snake River in Teton NP
Green below Flaming Gorge Dam (WY)	Susitna Basin Recreation Rivers, AK
Kern River (Upper and Lower), CA	
Kennebec River, ME	
Kennektok River, AK	
Madison River (Bear Trap), MT	
Merced (BLM Section), CA	
Merced (Yosemite Valley), CA	
Middle Ocoee, TN	
Middle Fork American (CA)	
New River Gorge, WV	
North Fork American, CA	
Shenandoah, WV	
Six Mile Creek, AK	
Situk River, AK	
South Fork American, Ca	
Twenty-Mile River, AK	
Upper Kenai River, AK	
Verde, AZ	
West Branch Penobscot, ME	
White Salmon, WA	

Allocation approaches

Among the 25 full allocation systems, all but two of the boating systems use a split allocation approach. The common pool approach is used on the Deschutes and three low use segments on New Mexico's Rio Grande. The two land-based fishing rivers (McCloud and Dukes Creek) also operate *de facto* common pools because guides are not allowed to make reservations or control a permit (but may accompany anglers who receive one). McNeil River bear viewing use is essentially all guided (by the state agency that manages the area).

Among partial systems, all of the commercial-limits-only rivers appear to be committed to a split approach. In several cases, non-commercial limits have been specified, making a split approach likely when limits are reached.

At least two potential systems have indicated that a common pool approach will be used when limits are needed (Chetco and Illinois River in Oregon), and allocation goals developed in a plan for the six Susitna Basin Rivers in Alaska also indicate that a common pool approach will be considered (if not required). On the Middle Fork Flathead River in Montana, the management plan calls for a common pool approach when limits are reached, but existing annual "service-day" limits for outfitters in the entire Flathead basin might confound those attempts (Ryan, 2008).

In addition, a common pool system is in place in Minnesota's Boundary Waters Canoe Area Wilderness (although this is not a river setting; see case study in Chapter 8). No current system uses an adjusting split approach, although several have adjusted their splits through planning efforts (most notably in Grand Canyon, see case study in Chapter 8), and several others allow cross-sector use at some points in the allocation process (see below).

What's limited?

Table 3 summarizes the type of use (launches, people, user-days) that is limited for full allocation systems; Table 4 does the same for example partial systems. The "combination" category lists rivers where limits differ by segments, different sectors are limited by different types of use, or where people and launches are both limited (and whichever is exceeded first controls the use level). Details are available in Appendix A.

There is diversity in what type of use is limited, but launches and people are most common. When launches are combined with group size limits, the result is a *de facto* limit on people (but usually won't be reached unless actual group sizes approach group size limits). Among full systems, longer multi-day rivers tend to limit launches, while shorter rivers tend to limit people. The exception "short trip river" that limits launches is the Rio Chama; the exceptional "long trip rivers" that limit people include the Rogue and Colorado through Cataract Canyon.

Partial allocation systems most commonly limit launches per day, but the Arkansas, Snake in Grand Teton, and Merced in Yosemite National Park manage boats per day. Most systems specify limits per day (e.g., launches per day, people per day), but a few specify limits per week (Cherry Creek, CA), per month (Green in Flaming Gorge, WY), or per year (Sixmile, AK). There are also partial systems that limit "boat-days" (number of boats per day through a season; Situk River, Alaska) and "service days" (number of days per year that trips can be offered, but not number of trips or people on those days; NF and Middle Fork of the Flathead, MT).

Table 3. Type of use limited under full allocation systems.

Launches	People	Combination
Alsek/Tatshenshini	Colorado in Cataract (UT)	Grand Canyon – Lees Ferry to Diamond (AZ) has additional annual user-day limits in the commercial sector.
Green Desolation (UT)	Deschutes River (OR)	
Main Salmon (ID)	Dukes Creek (GA)	Grand Canyon – Lower Gorge (AZ) manages private use by launches and commercial use by people
Middle Fk Salmon (ID)	Karluk River (AK)	
Rio Chama (NM)	Forks of the Kern (CA)	Rio Grande (NM) limits people on most segments; for Taos Box Canyon, non-commercial use is limited by people and commercial use is limited by launches.
Salt (AZ)	Rogue (OR)	
San Juan (UT)	Youghigheny (PA)	
Selway (ID)	McCloud TNC (CA)	Tuolumne (CA) has launch and people limits (which ever is exceeded first controls use).
Smith (MT)	McNeil (AK)	
Snake Hells Canyon (ID/OR)		Colorado in Westwater (UT) limits launches and people in each sector.
Yampa/Green (UT)		

Table 4. Type of use limited under example partial or potential allocation systems.

Launches	People	Boats	User Days	Combination / Other
Animas (CO)	Cheat (WV)	Arkansas (CO)	Sixmile Creek (AK)	Upper/lower Kern (CA)
Cherry Creek (CA)	Dead River (ME)	Merced NPS (CA)	Twentymile River (AK)	Flathead (MT) (service days)
Goodnews River (AK)	Gauley (WV)	Snake in Grand Teton		
Flaming Gorge (WY)	Kennebec (ME)	Snake (Henry's Fork)		
Gulkana (AK)	New River (WV)	Situk River (AK) (boat-days)		
Kannektok (AK)	So Fk American (CA)			
Merced BLM (CA)	Verde (AZ)			
MF American (CA)	WB Penobscot (ME)			
Middle Ocoee (TN)				
Rio Grande (Big Bend)				
Su Basin Rivers (AK)				
Snake (Alpine Canyon)				
Upper Kenai (AK)				

Primary distribution mechanisms

In split allocation systems, the ***primary distribution mechanism in the commercial sector*** is most commonly a "***negotiated calendar***." Outfitters receive a block of access specified as a use level per day (or week or season) and then schedule their trips accordingly.

On day-use rivers where the limit is launches or people per day for each outfitter, scheduling is simple. When allocations vary by outfitter or do not provide each outfitter trips every day, a within-sector allocation is needed. Outfitters sometimes negotiate for dates among themselves, but most rivers have an agency-managed process. Of these, adopting the previous year calendar is common (and often links back to the calendar in use when limits were first set). In a few cases, agencies conduct "selection meetings" that involve several rounds of choosing dates. The complexities of such processes are beyond the scope of this report, a detailed example for the Middle Fork American is available (Deitchman, 2003). Regardless of how a calendar is negotiated, the important consequence is that outfitters generally know when they can offer trips well before the season begins.

On ***the non-commercial side in split systems (or in common pools),*** there is considerable ***diversity*** in how permits are distributed. Table 5 summarizes the primary distribution mechanisms for full systems. More rivers (14 of 25) use lotteries or weighted lotteries than reservations (11 of 25). No primary mechanisms use pricing, on-site queuing, or merit.

Table 5. Types of primary distribution mechanisms for full allocation systems (non-commercial sector or for common pools).

Lottery	Reservations	Weighted Lottery
Forks of the Kern (CA)	Alsek/Tatshenshini (Can/AK)	Grand Canyon (Lees-Diamond) (AZ)
Karluk (AK)	Colorado in Cataract (UT)	
McNeil (AK)	Grand Canyon (Lower)	
Main Salmon (ID)	Colorado in Westwater (UT)	
MF Salmon (ID)	Deschutes (OR)	
Rio Chama (NM)	Dukes Creek (GA)	
Rogue (OR)	Green in Desolation (UT)	
Salt (AZ)	McCloud TNC (CA)	
San Juan (UT)	Rio Grande (NM)	
Selway (ID)	Tuolumne (CA)	
Smith (MT)	Youghigheny (PA)	
Snake (Hells Canyon)		
Yampa / Green (CO)		

Secondary distribution mechanisms

In split allocation systems, ***secondary distributions are less important*** in the ***commercial sector*** because outfitters market and fill trips for a known calendar, and are therefore less likely to need a trip outside that schedule. Although many scheduled commercial trips may not be used, the ability of other commercial outfitters to take advantage of unused trips is often more limited. For example, data from the Rogue River suggests about 11% of commercial use was distributed via a secondary system compared to 48% of private use.

Some rivers build flexibility into their systems by making unused commercial allocations available to other outfitters, or by creating a separate allocation available to all outfitters. Ten of the full allocation systems have commercial-sector secondary distributions (Cataract, Green River in Desolation/Gray Canyon, Main Salmon, Rio Chama, Rio Grande, Rogue, San Juan, Smith, and Tuolumne). Several commercial-only allocation systems also allow this practice among outfitters; examples include the Arkansas (CO), North and Middle Forks of the American River (CA), the BLM segment of the Merced, and Race Course segment on New Mexico's Rio Grande. These systems generally allow outfitters to request additional launches (or add people to existing trips) from a pool of unused commercial allocations. In some cases, this mechanism also allows outfitters to build future allocations while outfitters unable to use their allocations shrink. On other rivers, commercial pools of this sort do not decrease long-term allocations of the donating outfitter (Arkansas, CO).

On ***the non-commercial side,*** secondary systems are important because cancellation rates can be high and non-commercial users can often use cancellations on short notice. Table 5 summarizes the secondary mechanisms among full permit systems. Most rivers (16 of 25) use phone-in reservations, but there are two with web-based reservation systems, four walk-in reservation systems, and two that notify people on short-term waiting lists. Among the phone-in systems, most limit hours of operation (e.g., weekday mornings) to minimize administration costs.

Grand Canyon (Lees Ferry to Diamond Creek) is the only system with supplemental lotteries (4 to 8 per year) to fill cancellations. The park also has a phone-in reservation program to utilize cancellations that occur close to the launch date.

Table 6. Secondary distribution systems for full allocation rivers.

Call-in reservations	Web-based reservations
Alsek/Tatsheshini (Can/AK)	Deschutes (OR)
Colorado in Cataract (UT)	Youghigheny (PA)
Grand Canyon (Lower)	
Colorado in Westwater (UT)	**Notification by agency (short-term waiting list) / call-in reservations**
Dukes Creek (GA)	Salt (AZ) for one date
Green in Desolation (UT)	Snake (Hells Canyon) for one date
Karluk (AK)	
Forks of the Kern (CA)	**On-site queuing (walk-in reservations)**
Main Salmon (ID)	McCloud TNC (CA)
MF Salmon (ID)	McNeil (AK) among "stand-by" users
Rio Grande (NM)	Tuolumne (CA)
Rogue (OR)	Rio Chama (NM) walk-in on weekdays only
San Juan (UT)	
Selway (ID)	**Other**
Smith (MT)	Grand Canyon (Lees-Diamond) (AZ) supplemental lotteries and call-ins
Yampa / Green (CO)	

Commercial / non-commercial splits

Choosing the split between commercial and non-commercial use is probably the most challenging allocation decision under a split approach. Example splits are given for several launch-based (Figure 1) and people-based (Figure 2) systems. The splits reported are for the "control season" in full allocation systems, and percentages assume full utilization of an allocation.

Figure 1 shows that most launch-based systems provide at least 50% to the non-commercial sector, and some favor non-commercial use (e.g., Westwater, Tuolumne, Rio Chama, Selway, and Smith). The only river with more than 50% commercial launches is Grand Canyon (Lee's Ferry to Diamond Creek). The figure highlights the popularity of 50-50 splits (7 out of the 13 shown), which carry the aura of "equality."

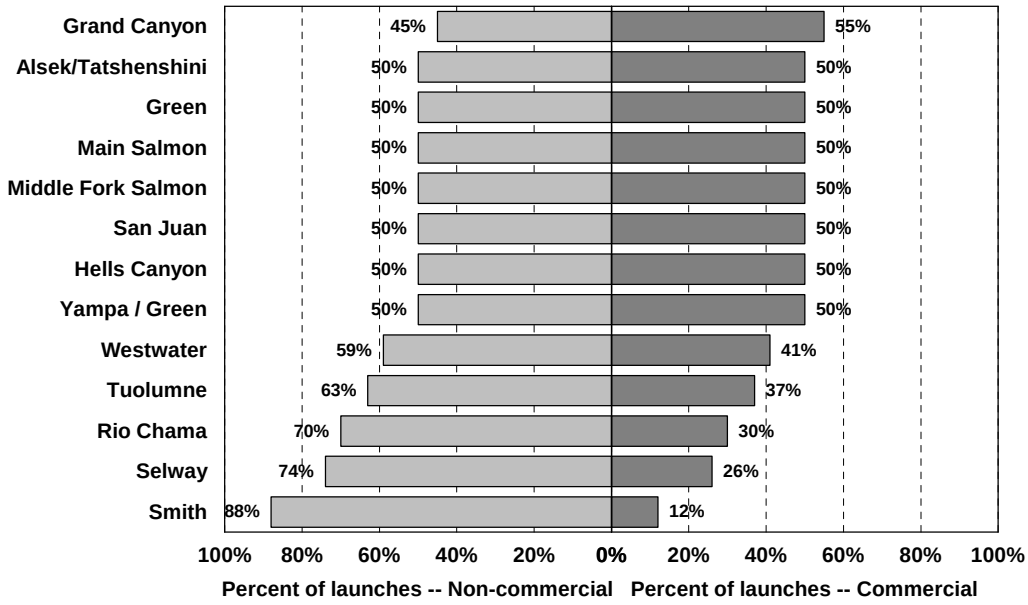


Figure 1. Example commercial / non-commercial splits for launch-based allocation systems.

Figure 2 shows that people-based systems tend to provide higher proportions to commercial use, although few segments favor non-commercial use. Commercial groups tend to be larger, so it is possible to send more commercial passengers down the river with similar numbers of launches in both sectors. It is also possible to develop splits that differ by day of the week. For example, the Taos Box segment on the Rio Grande (NM) has different splits for weekends (favors non-commercial) and weekdays (favors commercial) based on relative demand.

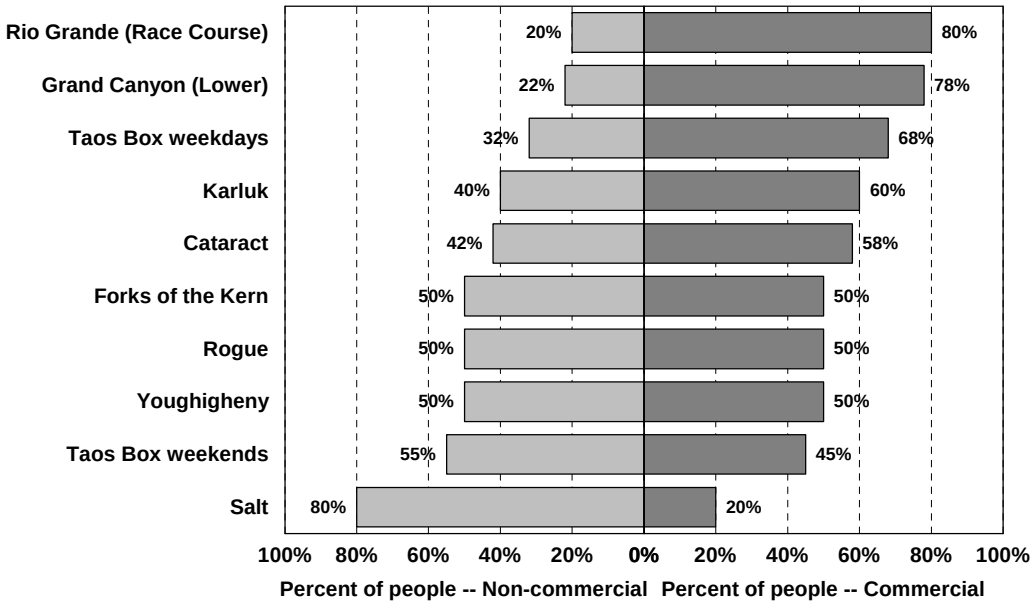


Figure 2. Example commercial / non-commercial splits for people-based allocation systems.

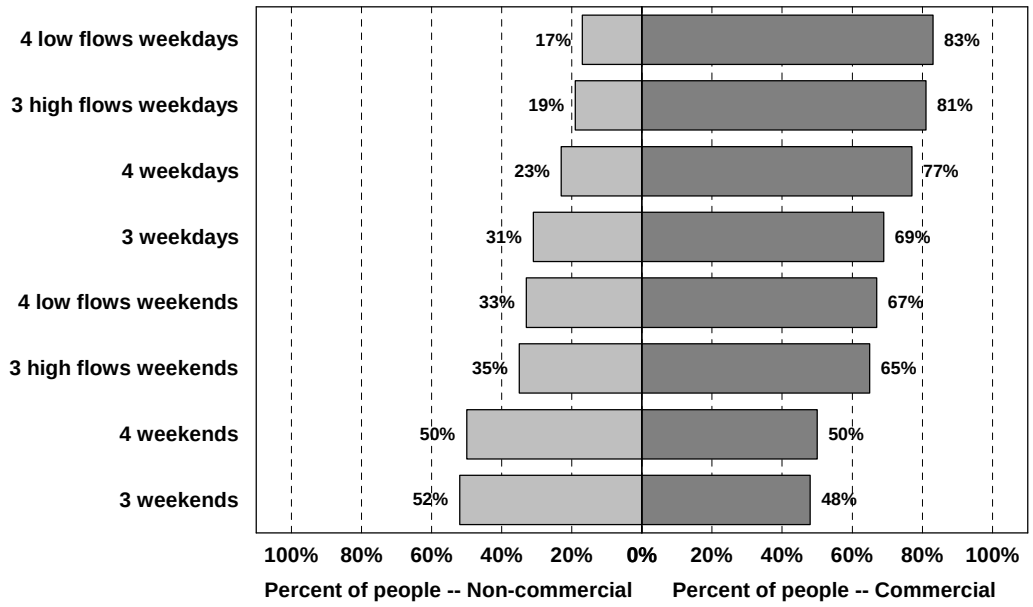


Figure 3. Commercial / non-commercial splits on Sections 3 and 4, Lower Chattooga River (GA/SC).
Note: Non-commercial use has not exceeded limits frequently enough to implement a full permit system.

Variable splits for the Lower Chattooga River (Figure 3) recognize demand in different sectors on weekends vs. weekdays, low vs. high flow times, and winter vs. summer (not shown). The Arkansas in Colorado also has variable splits on several segments (see case study in Chapter 8).

It is important to recognize that intended allocation splits (goals) do not always match actual utilization. Initial distributions usually allocate all the commercial and non-commercial launches, but cancellations, no shows, and secondary distributions do not occur equally in the two sectors. In addition, some systems allow non-commercial use of unused commercial allocations or vice versa (a common pool of unused allocation).

On high demand rivers, actual splits are closer to the intended splits because there are fewer cancellations. On rivers with less demand or longer seasons, actual use tends to shift toward non-commercial users who are more adept at using secondary distribution systems (probably because they have shorter planning horizons). Examples include:

- The Green River in Gray/Desolation has a 50-50 launch split, but allows non-commercial sector to utilize cancellations from both sectors, so about 70% of launches are ultimately non-commercial.
- Forks of the Kern has a 50-50 person split, but 60% of all users are non-commercial.
- The San Juan has a 50-50 launch split, but 77% of the launches, 64% of the people, and 73% of the user-days are non-commercial.
- The Main Salmon has a 50-50 launch split, but 64% of the launches, 53% of the people, and 57% of the user-days are non-commercial.
- Hells Canyon has a 50-50 launch split, but 58% of the launches and 62% of the user-days are non-commercial.

Length of "control season"

Many rivers with allocation systems require permits year-round (17 of 25), but most operate distribution systems only during a shorter "control season" when actual use is likely to exceed capacities. The average length of these seasons is 125 days, but a few are much shorter (e.g., 31 days for the Karluk, 79 days on the Main Salmon, and 77 on the Selway). The Deschutes and Youghigheny rivers limit use only on weekends during summer and early fall. Four rivers have control seasons year-round (Grand Canyon, Desolation/Gray, Dukes Creek in GA, and Rio Grande in NM).

Year when limits began

Figure 4 shows the dates when use limits were established for the 25 full allocation systems. Half of were developed in the 1970s, 24% in the 80s, 17% in the 1990s, and 8% so far in the 2000s. A comparable data set for partial allocation systems is unavailable, but it is likely to show a similar pattern. For unlimited rivers where we have examined use information, the most dramatic increases occurred in the 1970s and 80s and peaked in the 1990s. Since that time, use on many rivers is stable or increasing slowly; however, it is approaching defined limits on some popular rivers (e.g., Arkansas, Chattooga).

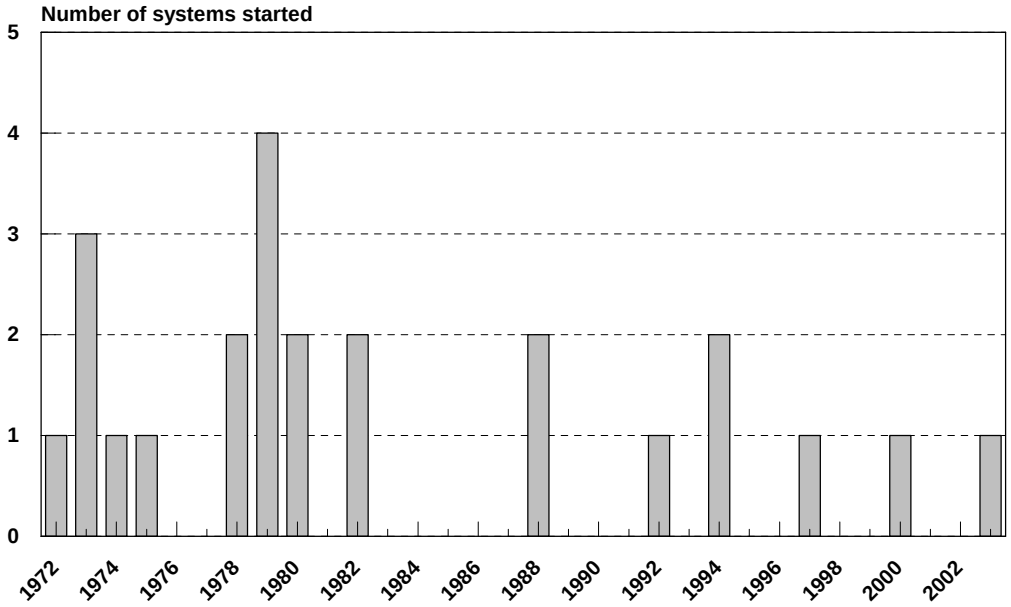


Figure 4. Number of full allocation systems started by year.

Distribution dates

Lotteries for non-commercial sectors are typically held in winter and offer a relatively short period when applications must be filed (Table 7). The most common deadline for applications (8 out of 15 systems) is January 31, although start dates vary (November 1, December 1, or January 1). Other deadlines are slightly earlier or later, and can create some confusion for boaters trying to keep the deadlines straight. The only lottery held substantially before actual trip dates is for the Grand Canyon, which held its 2009 main weighted lottery in February 2008.

Table 7. Application and distribution dates for non-commercial lottery systems (organized by end of application period).

River and State(s)	Application period		Results to applicants
	Start	End	
Karluk (AK)	Nov 1	Dec 15	Early Jan
Alsek/Tatshenshini (BC, Can & AK)	Anytime	Dec 15	Jan 15
Salt (AZ)	Dec 1	Jan 15	Feb
San Juan (UT)	Dec 1	Jan 31	Feb
Yampa / Green in Dinosaur National Mon.	Nov 1	Jan 31	Late Feb
Smith (MT)	Jan 1	Jan 31	Late Feb
Main Salmon (ID)	Dec 1	Jan 31	Mar 1
Middle Fork Salmon (ID)	Dec 1	Jan 31	Mar 1
Rogue (OR)	Dec 1	Jan 31	Mar 1
Selway (ID)	Dec 1	Jan 31	Mar 1
Snake in Hells Canyon (ID/OR)	Dec 1	Jan 31	Mar 1
Rio Chama (NM)	Feb 1	Feb 28	Early Mar
Colorado River in Grand Canyon (AZ)	Feb 1	Feb 28	Early Mar
McNeil River (AK)	Anytime	Mar 1	Mar 15
Kern River (CA)	Mar 15	May 15	May 1

Lottery success rates

Table 8 shows success rates for example non-commercial lotteries with comparable data. Rivers are ordered from lowest to highest success and rates range from about 3% on the Middle Fork Salmon to 62% on the Alsek / Tatshenshini. If only one person from a group applies each year, a 3% rate means success one out of 33 years, while 50% means success every other year.

Because most lotteries require applicants to specify individual dates (usually three to five preferences), odds are typically lower during the peak use season but better toward the shoulders. Demand for particular dates is sometimes available to the public (e.g., Grand Canyon, Yampa/Green, four Idaho WSR rivers), which can help applicants assess their chances of success. Applicants can increase their odds by having multiple people apply, and by competing in secondary distributions if they are unsuccessful in the primary distributions.

Success rates in lotteries are calculable only for those who apply through these systems. It is likely that some users find participation too burdensome (because of application fees, deadlines, planning horizons, etc.), but application/success statistics do not estimate this percentage. Similarly, success rates for reservation systems can't be calculated unless agencies track inquiries or those unable to reserve their first choice date.

Table 8. Recent success rates in example non-commercial lotteries (organized by success rates).

River	Applications [a]	Permits awarded [b]	Success rate
Middle Fork Salmon (ID)	10,200 [c]	350	3%
Selway (ID)	1,600 [c]	62	4%
Yampa / Green in Dinosaur National Mon.	5,200 [d]	300 [d]	6%
Grand Canyon (AZ)	2,300	194 [e]	8% [f]
Main Salmon (ID)	3,400 [c]	310	9%
McNeil River (AK)	1,600	185	11%
Rogue (OR)	5,800	800	14%
Smith (MT)	3,900	530	14%
Snake in Hells Canyon (ID/OR)	1,000 [c]	325	33%
Alsek/Tatshenshini (BC, Can & AK)	60 [g]	37	62%

Notes:
a. Number is rounded and based on most recent year (usually 2005 or 2006).
b. Number of permits = launches except for McNeil River (Rogue manages for numbers of people but also tracks launches).
c. Success rates based on first choice only (because 2nd, 3rd, and 4th choices could be on other rivers). Applicants that used all their dates for one river had slightly higher odds of success than reported here.
d. High use season.
e. 300+ permits awarded to applicants from previous waiting list + scheduling system (see case study for more details).
f. This was a weighted lottery, so odds were improved by people with more years since their latest trip; see case study.
g. NPS maintains multi-year waiting list; about 120 elect to remain from year-to-year, but only 60 request dates in any given year.

Fees

Application fees

Fees are charged for applications or reservations on 16 of the 25 rivers with full allocation systems. The median fee at these rivers is $6.00 (average is $10.50). The highest application fees are $25 per person at McNeil River bear viewing area, and $25 per application for the Grand Canyon and Alsek/Tatsheshini lotteries. Free applications are available at Cataract, Westwater, Karluk, McCloud, Rio Grande, San Juan, and Tuolumne.

User fees

User fees are charged at 21 of the 25 rivers with full allocation systems, but vary widely in how they are assessed. The most common method a fee per person per trip (9 of 21 systems or 43%); the median is $12.50, but this varies widely from $3 (Youghiogheny day trip) to $100 (Grand Canyon for 7 to 21 days). Other rivers charge trip fees for the entire group (6 of 21 rivers), with a median amount of $52.50, and a range from $10 (Forks of the Kern) to $185 (Yampa/Green in Dinosaur). Some rivers charge user fees per person per day (3 of 21 rivers); these fees range from $2 to $6 per person per day.

Table 9. Application and user fees for non-commercial permits on full allocation systems.

River	Application or reservation fee	User fees		
		Per trip	Per person per trip	Per person per day
Alsek/Tatshenshini (BC, Can & AK)	25	100		
Colorado River in Cataract Canyon (UT)	0	30		
Colorado River in Grand Canyon (AZ)	25		100	
Lower Gorge in Grand Canyon (AZ)	0		Hualupai Reservation fees only	
Colorado River in Westwater Canyon (UT)	0		7	
Deschutes River (OR)	2			2 (weekdays) 6 (weekends)
Dukes Creek (GA)	0		2	
Green River in Desoloation (UT)	20		25	
Karluk (AK)	0	0		
Kern River (CA)	2	10		
McCloud River (CA)	0	0		
McNeil River (AK)	25 (per person)		150 residents 350 non-residents	
Main Salmon (ID)	6			4
Middle Fork Salmon (ID)	6			4
Rio Chama (NM)	6		5	
Rio Grande (NM)	0		0	
Rogue (OR)	6		10	
Salt (AZ)	10	75		
San Juan (UT)	0		12 to 18 (depends on segments)	
Selway (ID)	6	0		
Smith (MT)	5		25 residents 50 non-residents	
Snake in Hells Canyon (ID/OR)	6	0		
Tuolumne (CA)	0	15		
Yampa / Green in Dinosaur National Mon.	15	185		
Youghigheny (PA)	3		3	

Alternate trip leader policies

Twenty-two of the 25 full allocation systems issue permits to trip leaders (the other three issue them to individuals). Of those, half (11 out of 22) allow alternate leaders if the initial leader cannot make the trip. For three rivers (Rio Chama, Salt, and San Juan), agencies accept alternates only with explanations or written requests. The others encourage alternates to help reduce cancellations, but have concerns that transfers to these alternates could encourage "speculation." To address this, most rivers require alternates to be named during the application process (and alternates cannot be a trip leader or alternate on other applications); alternate trip leaders cannot be named after a permit has been obtained. This may reduce multiple applications from the same group.

Policies intended to reduce cancellations of trips that "legitimately" lose their leader thus serve two reasonable administrative goals, but they also "force" users to make choices about which group to join when the trips are still uncertain to occur (before the lottery).

Repeat user limitations and participant tracking

Limiting people to one trip per year or every couple of years is a way of increasing chances for people who have been unsuccessful in the past (or haven't been on a trip recently). Of the 25 full systems, only three appear to track participants (as well as trip leaders) to institute this policy: Grand Canyon, McNeil, and Yampa/Green. Of these, the Grand Canyon and Yampa/Green allow one trip per year, while McNeil allows one trip every other year (previously one year in four). The Grand Canyon is the only river that tracks "repeat trips" among commercial users as well as non-commercial users.

Repeat user rules have been criticized for preventing people with more flexible lifestyles from taking trips that are otherwise available (Robertson, 2003; Perry, personal communication). Repeat users may also have valuable experience that can help non-commercial trips be better prepared and more successful.

On some rivers with reservation systems, trip leader tracking prevents individuals from holding more than one (e.g., Deschutes) or two (e.g., Rogue) reservations at once. On the Youghiogheny, "season passes" allows boaters to make unlimited reservations and started to lead some users to "stockpile" good launch dates and times; a simple agency request to these users was apparently sufficient to reduce the problem.

Use of overbooking

Few full permit systems use "overbooking" to ensure higher utilization of allocations (and compensate for inevitable cancellations), but it is practiced on the, Rio Chama, and Rogue (and was used on the Green in Gray/Desolation when it had a lottery). On the Green and Chama, the amount of overbooking is usually just one launch, and rarely resulted in higher than capacity use levels. The Rogue allows over-booking in both sectors, and also has built in a "flex" policy in the commercial sector that allows capacities to be slightly exceeded in certain seasons. A similar allowance is available on some segments of New Mexico's Rio Grande, but with added fees to remove a profit incentive (but still allow a slightly larger than usual trip to go on occasion).

Cancellation and no show policies

Trips may cancel for many reasons, but one commonly discussed potential cause is related to the number of users that hold "permit parties" to fill out multiple applications to several rivers to increase their chances of their group. Although the extent of this practice is unknown, it probably contributes to higher cancellation rates because some groups may receive more permits than they can use.

Eleven of 25 full system rivers have penalties for cancellations and no shows, generally preventing applications in future years. The most common penalties prevent applications for one year (Forks of the Kern, Green in Desolation, Smith, Snake in Hells Canyon, Tuolumne, Rogue); two years (Alsek/Tatshenshini, Yampa/Green); or three years (Main Salmon, Middle Fork Salmon, and Selway). Penalties typically prevent a person from applying as a trip leader, not from joining other trips.

Six of 25 rivers provide credit toward future fees for cancellations made sufficiently far in advance, thus encouraging people to cancel in time to let others use the launch. The lead time required in these policies ranges from seven days (Forks of the Kern) to 30 days (Green in Desolation, Westwater, San Juan, and Salt). Several rivers encourage permittees to "commit" to a trip after a successful reservation or lottery application by requiring fees shortly after notification. The largest "confirmation" fee is from Grand Canyon, which requires $400 within 10 days (but this can be used toward eventual user fees).

Group size limits

Group size limits are included in nearly all full allocation systems; they are particularly important for managing numbers of people with launch-based systems. Table 10 shows group size limits for the 25 full systems for private and commercial trips. Notable findings include:

- Eleven out of 25 (44%) rivers had different group size limits for the two sectors. Commercial trips were commonly larger than non-commercial trips when use limits were first established, so differential group size limits are often a historical artifact.
- Three rivers consider guides "invisible" in terms of group size limits (they are not counted). This allows commercial groups to be larger, but has been justified by managers who note that under-staffed commercial trips are more likely to have safety or impact problems (if guides count, there is a motive to bring fewer of them). From a capacity/social impacts perspective, however, guides are not invisible when one encounters a commercial group, so there are trade-offs between managing for capacities and for quality of commercial services with this decision.
- Two rivers (Deschutes and Rio Grande, NM) have different group size limits on different segments, recognizing potential differences in types of recreation opportunities in those segments.
- On all rivers taken together, the median non-commercial limit is 16 and the median commercial limit is 25.

Table 10. Group size limits for commercial and non-commercial trips (ordered by size).

River	Non-commercial	Commercial	Notes
McCloud River (CA)	--	--	10 anglers at one time on 3 mile river.
Dukes Creek (GA)	3	3	15 anglers at one time on 4 mile river.
McNeil River (AK)	3	--	10 viewers at one time at falls.
Karluk (AK)	6	6 + guides	
Smith (MT)	15	15	8 for secondary distribution trips.
Kern River (CA)	15	15	
Alsek/Tatshenshini (BC, Can & AK)	15	15	Some outfitters grandfathered at 25.
Salt (AZ)	15	15	
Selway (ID)	16	16	
Rio Chama (NM)	16	16 + guides	
Lower Gorge in Grand Canyon (AZ)	16	20	96 on Hualapai motorized day trips.
Rio Grande (NM)	16	16 / 21 / 32 / 40	Differences for different segments.
Deschutes River (OR)	16 / 24	16 / 24	Differences for different segments.
Colorado River in Grand Canyon (AZ)	8 / 16	32	8 for small party private permits only.
Rogue (OR)	20	30	
Snake in Hells Canyon (ID/OR)	24	24	
Middle Fork Salmon (ID)	24	24	
San Juan (UT)	25	25	
Colorado River in Westwater Canyon (UT)	25	25	
Yampa / Green in Dinosaur National Mon.	25	25	
Youghigheny (PA)	25	25	
Green River in Desoloation (UT)	25	25 + guides	
Tuolumne (CA)	26	26	
Main Salmon (ID)	30	30	
Colorado River in Cataract Canyon (UT)	40	40	

Number of commercial outfitters

The number of outfitters vary considerably on North American rivers. In the survey of about 110 rivers with full or partial systems, the median number of outfitters was 12, with the typical range between 5 and 22 (the 25th and 75th percentiles).

There were some rivers with fewer outfitters (30 had five or less), and most of these were remote or difficult streams with low commercial use (e.g., Bruneau/Jarbidge, Forks of the Kern, Illinois, Cherry Creek). Notable exceptions with higher use but low numbers of outfitters include the Chattooga (three rafting outfitters and two kayak instruction outfitters) and the Madison in Bear Trap Canyon (two outfitters).

Some rivers have much higher numbers of outfitters than the averages, including Oregon's Deschutes (104) and Montana's Beaverhead (87), Big Hole (116), and Madison (159). These rivers are characterized by high quality fisheries and have fishing-based outfitting that is often conducted by one-person outfitter-guides. The Kenai River in Alaska, where most of the commercial use is fishing-based, manages guides instead of outfitters and there are over 380.

In most cases outfitter numbers are regulated by the lead managing agency for the river. However, at least three states (Idaho, West Virginia, and Maine) have developed regulations for outfitter-guide industries that include limits on the number of outfitters for particular rivers. In Maine and West Virginia, the state is the *de facto* authority for three and five rivers (respectively). Limits include the number of outfitters and total passengers per day (although most capacities are much higher than current use, and appear to have been raised in the past to accommodate outfitter requests without substantial capacity issue review). Idaho has established limits on numbers of outfitters for about 35 river segments, and for about a third of those rivers, it also controls the number of clients per guide or boats per outfitter at one time.

Guided driftboat fishing on the Upper Kenai River in Alaska during high use "combat fishing" season. The number of guides and "starts per week" are limited on parts of the Upper Kenai.

What's the "right" number of commercial outfitters?

The number of commercial outfitters is not necessarily related to the amount of commercial use, and few agencies expect limits on that number to control commercial use. But there are many reasons to limit the number of commercial outfitters, and that number has implications for other allocation decisions. It is beyond the scope of this report to fully review this issue, but a few key variables include, but are not limited to:

Historic use. The number of outfitters at a river is often an artifact of historical use patterns when limits were established. Most allocation systems began with a freeze on use levels, and that often included a freeze on the number of outfitters. It is possible that market forces and entrepreneurial decision-making decided the "right" number of outfitters prior to the limit, so historic use may provide a good starting point. But establishing such limits also changes the market (see below) and increases the need for administrative oversight, so additional review of the number of outfitters could be important.

Type of trip diversity. In some settings the number of outfitters roughly correlates with the diversity of trip styles that a diverse public might appreciate, but there is a point of diminishing return. When commercial use is "open" and growing (e.g., before limits), diversity may develop organically as entrepreneurs identify and develop marketable trips. As the market stabilizes and outfitters identify the trips with the highest profitability, diversity may decrease. Although agencies could identify and require outfitters to provide certain types of trips to maintain diversity, maintaining a "stable" of outfitters may achieve the same result without direct regulations.

Type of river and recreation opportunities. Larger rivers, longer rivers, or those with more diverse river recreation opportunities are candidates for more rather than fewer outfitters. Similarly, rivers with motorized and non-motorized use may be candidates for more outfitter services.

Economic considerations. There is little public benefit to encouraging more outfitters than the market will bear, but it can be challenging to determine when over-competition (as opposed to individual outfitter quality) produces poor outfitter performance. A monopolistic situation where a small number of outfitters control pricing is another concern, and this can be confounded by the monetary value of allocations. In general, agencies want reasonable-sized "markets" that encourage price and service competition, without encouraging more outfitters than commercial demand will support. Administrative oversight (e.g., applying concession laws that allow profit reviews & price setting) to prevent monopolistic practices is possible, but can be challenging and expensive for agencies if the number of outfitters is large.

Geographic considerations: The way commercial passengers find and use commercial services can be important. The geography of population centers, user travel patterns, outfitter headquarters, and the river are all important. More remote rivers that have a single gateway need fewer outfitters; the public gains little from too many choices in the same place unless they are truly providing a different type of trip.

Continued next page

What's the "right" number of commercial outfitters? (continued)

Administrative efficiency. More outfitters requires more administrative effort, and it doesn't serve the public interest to spend tax dollars managing "many" if similar quality services can be provided by "few." Regulations can also be used to encourage or require outfitters to be "professionals" rather than "hobbyists," and many state and federal agencies have minimum licensing or certification standards to help distinguish substantive businesses from marginal ones (e.g., BLM regulations, National Park Service Concessions Management Improvement Act, US Forest Service special use permit program (undergoing revision process winter 2007-2008)).

A mix of commercial and non-commercial boaters at the put-in on the Middle Klamath River near Happy Camp, California.

Chapter 8: Case studies

This chapter provides six case studies with detailed information about pioneering or innovative allocation systems or issues. Case studies include:

- Grand Canyon: Precedents, controversy, and innovation
- Idaho's Four Rivers Lottery: Standardizing application procedures
- McNeil River: Evaluating allocation systems
- Arkansas River: Allocation on a high use river
- Boundary Waters: A common pool model
- Lower Deschutes: A river-based common pool

Grand Canyon: Precedents, controversy, and innovation

People count up the faults of those who keep them waiting.
French proverb

Grand Canyon is the place where river allocation began in 1972, setting precedents for many other rivers and developing some of the most complex (and contentious) systems in the country. The Grand Canyon also has some of the best information about consequences of allocation systems; it's on-line launch calendar tracks 100% of launches, users, user-days, and boats from Lees Ferry to Diamond Creek. This case study reviews Grand Canyon capacity and allocation history, and then describes the (recently replaced) multi-year waiting list, innovative alternatives considered in a recent plan revision, and the weighted lottery adopted in 2006. The park continues to adjust the permit system as the waiting list transitions to a weighted lottery system.

A brief history of Grand Canyon allocation

River running in Grand Canyon grew dramatically from about 500 people in 1965 to over 17,000 in 1972. The National Park Service froze commercial use in 1972 and non-commercial use a year later, then began a series of multi-year studies to examine visitor impact issues. At the time, commercial use was 92% of the user-days (and 97% of the users), and the initial system gave each outfitter control of an annual allocation of user-days, which were distributed informally through the season with a negotiated calendar.

Non-commercial permits were initially issued on a first-come/first served basis, and an informal waiting list was available for cancellations. Anticipating demand for the small number of non-commercial launches, a "no repeat" rule (only one trip every two years) was included in the system. Demand in the non-commercial sector outstripped supply from the outset, and a lottery was established from 1976 to 1979.

As planning came to a head at the end of the 1970s, Grand Canyon's allocation controversy focused on the one-sided split between commercial and non-commercial use. The situation was partially addressed by increases in both sectors in the proposed 1979 plan. Commercial use increases of about 29% were designed to provide additional user-days to convert motorized to non-motorized use within five years. That conversion never occurred (in part because of the "Hatch Amendment," a 1981 Congressional "rider" that blocked parts of the 1979 plan), but those commercial use increases remained. On the non-commercial side, user-days went from about 8,000 in the 1970s to 45,000 by the end of the 1980s. This boosted the non-commercial user-day proportion from 8% to 30%, even though summer use remained below 25%.

The 1979 plan also replaced the non-commercial lottery with a waiting list and scheduling system. Initially it provided permits to those willing to wait a few years, but demand continued to exceed supply defined by capacities and waiting length increased each year. Through the 1990s and early 2000s, subtle permit system changes increased non-commercial use to 54,000 user days (about 35% of the total), but the waiting list for roughly 250 permits per year had exceeded 4,000 names by 1990 and 8,000 by 2003 (the start of another plan revision).

The 2006 plan changed several aspects of the allocation system, including:

- Switching from capacities driven by user-days on the commercial side and launches on the non-commercial side to a launch-based system for all use (although it retained the annual commercial user-day capacity);
- Increasing non-commercial use in the shoulder and winter seasons to boost non-commercial use (by user-days) to nearly 50%.
- Implementing a weighted lottery in place of the waiting list and scheduling system.
- Developing protocols to transition from the waiting list to the new system.

The plan also explored (but did not implement) alternative allocation concepts such as a points-based auction and all-user registration effort. Consequences of this work are briefly discussed below.

The non-commercial waiting list: A cautionary tale?

Grand Canyon's multi-year waiting list system for non-commercial use was unique and controversial. Initially considered efficient and fair, its complexities and inability to cope with high demand led the NPS to freeze new additions in 2003 and replace the system in 2006. Characteristics, issues, and advantages/disadvantages of the waiting list are listed below.

- ***How it worked (in brief).*** Individuals mailed application and paid fees ($100 by 2003) to receive a "place in line." There were no age restrictions, but trip leaders had to be 18 by the date of the launch. Each fall, the park contacted the top 300 people on the list to schedule about 250 launches. People who received a date were moved from the waiting list to "Scheduled Permits," but people who didn't could stay on the waiting list indefinitely. Even after initial scheduling, permit holders who found themselves unable to take the trip could "defer" the trip to the same date in three years time.

- ***Staying on the list.*** People who wanted to remain on the waiting list were required to indicate "continuing interest" at least three years in four or they were dropped from the list. A person could join only one other non-commercial trip while waiting on the list (there were no limits for those not on the list). Overall, 42% of those joining the list left the list before receiving a permit. Of those, about one-third missed "continuing interest" deadlines, about one-third joined more than one other non-commercial trip, about a quarter scheduled a launch then cancelled, six percent removed their names voluntarily, and two percent died.

- ***A successful secondary distribution system.*** By 2003, a person joining the list of over 8,000 names theoretically had to wait more than 20 years to schedule a trip. However, not everyone had to wait that long. About 30% of scheduled launches were cancelled, making about 65 dates per year available to people on the list. The secondary (call-in) distribution system allowed people waiting longer to apply earlier for those cancellations, but about 5% of launches went to people who had joined the waiting list that same year.

- ***The "repeat use" issue.*** Critics sometimes claimed that "repeat use" inflated non-commercial demand and the length of the waiting list. However, analysis showed that 87% of non-commercial boaters took only one trip in five years, and only three percent took more than two (Sullivan, 2003). While people claimed to know non-commercial boaters who "run the river every year," this was true for less than half of one percent.
- ***Would higher non-commercial use have "fixed" the waiting list?*** When the waiting list was discontinued in 2003, NPS analysis (Sullivan, 2003) showed that even if twice as many non-commercial trips were offered in the previous 15 years, the waiting list would exceed 4,000 names (an estimated wait of seven years) and still be growing. Unless supply and demand are roughly balanced, waiting times will ***always*** grow under this type of system. The Alsek-Tatshenshini (which adopted the Grand Canyon model) has such a balance. Most applicants receive a launch within one or two years. It has about 120 people on the list each year, about 60 receive launches in the primary system, while others pick up cancellations.
- ***Other waiting list problems.*** The Grand Canyon waiting list system was accused of several other problems, including: 1) lack of clarity about who should join (e.g., NPS did not discourage people who might not be able to organize a trip); 2) confusing rules that changed several times; 3) long waits between scheduling and launch dates discouraged realistic trip planning; 4) long waits favored less spontaneous users who could plan years in advance; 5) onerous and punitive rules apply only to non-commercial users on the wait list, putting an "unequal" burden on them compared to commercial users; 6) repeat use rules worked against safety or visitor impact goals (because repeat user experience helps trips "function" better); and 7) creation of a "scarcity" mentality, which encouraged "redundant" applications from several people in a prospective group.
- ***Guaranteed eventual success.*** With all the criticism of the waiting list, it had one important advantage: those who observed the rules would eventually obtain a permit. Lotteries, in contrast, cannot make that guarantee (although weighted lotteries address this issue).
- ***Highlighting non-commercial demand and allocation dysfunction.*** Analogous to a popular restaurant that continues to take reservations even after the kitchen is closed, the long waiting list was *prima facie* evidence that Grand Canyon's allocation system was broken. Maintaining such a list in the face of increasing demand may indicate a restaurant's popularity, but keeping people's expectations high while their stomachs remain empty is not a recipe for success. Moreover, the commercial sector could be compared to a large banquet room, with a steady stream of commercial passengers bypassing the waiting list customers.

An untried alternative: The all-user registration system and adjusting split

One allocation action contemplated in the 2003-06 planning effort would have collected information about commercial and non-commercial demand and adjust splits more realistically. The draft river management plan (NPS, 2004) proposed a program that would have required all users to register through an NPS-operated "gateway" before deciding whether to join a commercial trip or apply for a non-commercial permit. This would allow the NPS to assess demand for different types of trips as well as the length of time between an individual's initial registration date and when they got to take a trip. The program included adjustment prescriptions if the current split was out of balance with actual demand or waiting times.

The details of this untried system are beyond the scope of this report, but it had at least three features designed to make it more attractive to stakeholders. First, multiple-year averages from demand data would be used to avoid large adjustments from any given year. Second, adjustments

were limited to losses (or gains) of no more than two launches per month per sector to minimize the pace of changes. Third, no sector would be allowed to go below 40% of the total user-day allocation.

Despite these features, several stakeholder groups remained strongly opposed, claiming an all-user registration program and adjusting split would develop another layer of bureaucracy for commercial passengers, require substantial administrative effort, and prolong user conflicts between commercial and non-commercial boaters. Underlying these concerns, stakeholder groups appeared uncertain whether demand information would ultimately increase or decrease allocation in their sector (true demand for the two types of trips remains unknown). When several interest groups developed "Joint Recommendations" in response to the NPS draft plan (Grand Canyon River Outfitters Association, Grand Canyon Private Boaters Association, Grand Canyon River Runners Association, and American Whitewater, 2005), the all-user registration / adjusting split concept was explicitly opposed. The NPS, which had initially made all-user registration "common to all alternatives," removed it from the final plan.

From a scientific perspective, an all-user registration remains the one practical way to learn about demand and consequences when a split system is already in place, although it still only measures intention to take a trip rather than true demand. From a public policy perspective, an adjusting split also remains conceptually attractive, and might be politically feasible with safeguards that prevent fast adjustments and guarantee minimum splits. Until one is implemented, however, actual benefits and consequences of such a program remain speculative.

The new non-commercial weighted lottery

In addition to non-commercial use increases, the 2006 plan developed a weighted lottery for the non-commercial sector. For more detailed information about the Grand Canyon non-commercial permit system, see the NPS regulations, a list of "Frequently Asked Questions," and application/success statistics on the park website (NPS, 2007) or interest group reviews (e.g., River Runners for Wilderness through its "Riverwire" bulletin board).

- ***How it works (in brief).*** Potential applicants create a profile in the NPS internet-based system before applying for a specific year's main lottery (or smaller follow-up lotteries). The profile tracks your latest trip in the Grand Canyon and awards "points" (up to a maximum of five) for every year since your last trip. Applications with more points have increased chances of winning permits in the lottery. Establishing a profile is free, but applying in the main lottery costs $25 per year (this covers follow-up lotteries in that same calendar year). In the main lottery, one can apply for up to five dates. If you win, $400 is due within 10 days to confirm the launch. Once you take a trip (as a leader or a passenger on another permit), your "points" revert to one for the next year.
- ***Trip leader policy.*** Applications can include potential alternative trip leaders (PATLs) that allow the trip to continue if the original trip leader can't go. Individuals can be on only one application in any lottery. In addition, the number of points for an application is the lowest number of any co-applicant (trip leader or PATL). One key to success in the lottery is to not include anyone as a trip leader (or PATL) if they have been down the river in recent years; those people can still be invited on a trip that has received a permit, just not as trip leaders.
- ***No repeat policy.*** Individuals are allowed one trip (commercial or non-commercial) per year.
- ***Timing and number of lotteries.*** The first main lottery for 2007 dates was in October 2006, and seven follow-up lotteries were held through 2007. A more typical schedule was established in 2007 for 2008 dates, with the main lottery in May and four follow-up lotteries

in June, Oct, and December. A May lottery creates an effective planning horizon of 12 to 16 months for summer launches. Future plans are to move the main lottery to February (for more consistency with other rivers), but it will apply for summer launches a year and several months distant.

- ***Secondary distributions.*** Follow-up lotteries have been used to distribute cancellations that become available about a month in advance of the date. However, the NPS has recently posted cancellations less than a month out on its website; people can pick them up through a call-in system. The NPS is currently testing an internet-based automatic notification system.
- ***Phased transitions from the waiting list.*** The NPS developed a three-phase transition from the old waiting list system to the new weighted lottery. First, it offered launches to people who had been waiting the longest (and were due in the next few years). Second, it offered one-time refunds of fees for those with high numbers or those less interested in applying for future permits. Third, it offered people who could combine sufficient "waiting points" (from years on the list) to schedule launches over the next several years. Taken together, these options removed about 3,000 names from the list.

  The remaining 5,000 were shifted to the new system with extra points for their relative position on the list. The park is also tracking waiting times to ensure former waitlist users get to take a trip at least as soon as they would have under the old system. Based on 2007 data, 23% of the applicants in the main lottery were former wait list participants with extra points and they received about 28% of the permits. Combining all the 2008 trips scheduled through the transition and lottery, former waitlist participants accounted for 345 trips, much higher than the 250 offered under the old system.
- ***Odds of success.*** About 8% of the applications in the 2007 main lottery were offered permits, but this is averaged over the entire year. In the fall non-motor season percentages dropped to 4%, while May-Aug was 5%, Mar-Apr was 12%, and Dec-Feb was 86%. These odds are based on a lottery that distributed just less than 200 trips. After about 300 "transition launches" become part of the annual lottery, the chances of success will improve dramatically.

Grand Canyon was the first river to allocate use, and it has tried several different approaches, including a pure lottery, reservations/waiting use, and a weighted lottery. High demand and historical use patterns have made allocation decisions controversial.

Idaho's Four Rivers Lottery: Standardizing application procedures

Four Idaho Wild and Scenic Rivers (Main Salmon, Middle Fork Salmon, Selway, and Snake through Hells Canyon) share a common system. This illustrates the advantages of regional coordination and shows how a pure lottery works under a split allocation approach.

- ***How it works (in brief).*** There is a two-month application window (Dec 1 to Jan 31), with the drawing in February, and successful applicants are notified by the end of February. Applications are made in the trip leader's name and that person may indicate up to four date / river "choices." Winners are chosen by a random number generation program that draws applicants after sorting for each river, date, and by choices (first choice, second choice, etc.). In essence, the system holds "mini-lotteries" for each day in the season. If there are no more applicants for a certain date and river among the "first choices," the drawing moves on to "second choices" and so on. Permits are offered to the trip leader who must accompany the trip; the permit is non-transferable. Applications can be made on-line or through the mail. Fees can be paid by credit card.
- ***Assessing demand for different rivers.*** The lottery is a potential indicator of demand for different rivers and dates. Based on 2007 data, the Middle Fork receives the most first choice applications (63%), followed by the Main Salmon (21%), Selway (9%) and Snake (6%). The most popular Middle Fork dates have roughly three times as many applicants as the most popular Main Salmon dates, four times the most popular Selway dates, and ten times the most popular Snake dates.
- ***Chances of success.*** For all four rivers taken together, about 16,000 people apply each year for about 1,080 permits, a roughly 7% chance of success. However, odds are variable for different rivers and dates, with chances of success higher on the Snake and Main Salmon than the Middle Fork and Selway. On the most popular Selway dates, there may be 90 "first choices" competing for a single launch (just over a 1% chance); on the most popular Middle Fork days, as many as 400 apply for three to four launches (also about a 1% chance). In contrast, there are rarely over 100 applicants for the four launches available on the most popular Main Salmon dates (a 4% chance), and rarely more than 30 apply for three launches available on the most popular Snake dates (a 10% chance).
- ***The effect of the "first choices" drawing.*** Because there is high demand for most "river-date combinations," most permits are awarded to applicants who name a river and date as their first choice. On the Middle Fork (99%), Selway (98%), and Main Salmon, (95%), nearly all the permits are awarded to "first choices" so there is little reason for applicants to list a second, third, or fourth choice. On the Snake through Hells Canyon, about 85% of all permits go to "first choices," and lower choices can be relatively successful during the shoulders of the control season. By combining all four rivers into one system and giving priority to "first choices," the system allows applicants to effectively compete for only one of these four rivers each year (through the primary distribution). If a group wants to compete for more than one river, they need to have other members of their group complete applications as well (a practice that may be common, but no one knows for sure). The "first choices" effect may have been a deliberate way to discourage groups from applying for several trips and then taking the "best" one they draw (which increases cancellations on the others), but this effect is not highlighted in lottery materials and may not be well understood by many applicants.
- ***Administrative efficiencies.*** The system creates some administrative efficiency: there is a single application and website, standardized procedures, and a single office can administer

the drawing and manage program statistics. However, each river operates its own capacities, fees, regulations, and secondary distribution systems.

- ***Simplifying applications for users.*** The system creates "one-stop-shopping" with standardized procedures and clearly-stated chances of success. However, it limits the number of rivers one might apply for (the "first choices" effect described above).
- ***Standardizing applications across other rivers?*** The four rivers lottery is a potential model for application procedures on other rivers. Users would probably appreciate standardized filing dates, websites, fees (especially if they were lower), and payment mechanisms (e.g., on-line credit cards). Users would probably dislike such a system if it extended the "first choices" effect to more rivers (narrowing the number for which they could realistically compete in a given year). Making applications too easy might also encourage greater participation, decreasing the chances of success.
- ***Privacy concerns and centralization.*** Several agencies are considering whether to centralize and/or contract river permit application processes. Many Forest Service and National Park Service campground reservations are processed through large travel industry services (e.g. Reserve America). Aside from the loss of local contact between users and managers, centralization may increase fees despite economies of scale because contractors charge a service fee. New privacy laws and regulations have increased the standards for keeping public information secure, and the cost of meeting these standards may be too high to implement at a field office level (Christianson, personal communication, 2007). If these new standards are enforced, some existing river permit systems may have to be overhauled, providing opportunities for standardization and efficiency.

Beach on Idaho's Main Salmon, one of four rivers that are included in a single lottery system.

McNeil River: Evaluating permit systems

McNeil River State Game Sanctuary and Refuge protects about 200 square miles of wildlife habitat and provides a popular bear-viewing area about 250 miles southwest of Anchorage, Alaska. People have been visiting the area for bear viewing since the 1940s, and crowding concerns led to a 10 person per day limit at the falls in 1973. The area is accessible only by air; most viewers stay for several days and camp about an hour's walk from the falls (where the highest bear concentrations are found). The permit program has some features relevant to river allocation, and has conducted a survey to evaluate the system (Bright, 1998).

- Ten people per day can get permits for "Four days at the falls," with no more than three people in a group.
- If some permitees choose not to go to the falls every day, "standby" permitees are allowed to take their places. This maximizes viewers at the falls.
- An earlier informal standby system allowed people to travel to the campground or "get in line" via radio from air taxi locations for potential daily openings to the falls. Demand overwhelmed this system, producing crowding at the campground and air taxi terminals and disappointment among those who traveled to the campground but couldn't go to the falls.
- The current standby system was implemented in 1993, designating three standby permit-holders for each four-day block. With average use of about seven to eight primary permit-holders per day, most standby users (97%) have been able to go to the falls. Most applicants (73%) support this secondary distribution system.
- Cancellations among lottery winners are filled by standby users. However, there is strong support (over 70%) for a supplemental lottery to fill these openings instead.
- Prior to 1993, successful applicants were not allowed to re-enter the lottery for four years. This rule created a form of weighted lottery by increasing chances for those who had failed in the past. The study showed strong support for this rule, particularly among unsuccessful applicants.
- In recent years, declining demand led the agency to reduce re-application waiting time to one year; this also raised agency revenue because application fees are non-refundable. (Decreased demand is probably due to the creation of substitute (and cheaper) bear viewing opportunities on the Katmai coast near McNeil River).
- There was strong support for commercial use fees for "special permits" available to scientific, educational, and media groups.
- A proposal to offer a small number of permits (less than one percent) in a price auction was considered "unfair" by 66% of respondents, but 12% reported they would participate in such an auction.
- The system previously offered 65% of the permits to Alaskan residents (a "split system" on residency). Non-residents were strongly (71%) opposed.
- The survey asked about application and user fee increases. Willingness to pay was higher than existing fees, and led to fee increases. Current application fees are $25 per person and user fees for the "Four day permit" are $150 for residents and $350 for non-residents.
- Higher fees may have discouraged applications although other factors may also have contributed. Odds of success in the past were about one in seven (14% chance per year); in recent years it has increased to one in four (25% chance).

Arkansas River: Allocation on a high use river

The 148-mile Arkansas River in Colorado has multiple day use segments used by over 400,000 boaters and anglers per year. Cooperatively managed by Colorado State Parks and the BLM, the Arkansas has had commercial use limits (number of outfitters and per day use limits) on some segments since 1995, but has not yet implemented non-commercial limits defined in a 1998 plan. With increasing and shifting use, managers face challenges adapting the commercial-only system or limiting both sectors. Highlights include the following:

- The Arkansas defines use limits by boats rather than by people or user days. On several whitewater segments, the number of boats is probably a better indicator of certain impacts (e.g., waiting times at rapids and launches, number of other craft in sight, boats passing anglers). However, this can create capacity challenges if there are shifts in boat types (e.g., increases in anglers using single-person float tubes compared to the number of multi-angler rafts or driftboats).
- Use limits on various Arkansas segments range from 10 boats per day (Leadville to Granite) to 600 boats per day (Buena Vista to Fisherman's Bridge).
- The Arkansas uses a split system, but recognizes substantial differences in demand for different segments. Figure 5 shows intended splits for nine segments (if use were to reach those limits). Based on historical use levels (circa 1989-1994), commercial use is higher on whitewater segments and lower on fishing segments.
- Limits are enforced (which the Arkansas labels "rationing") only when they were exceeded more than five days in the previous year (and only for those dates when it was exceeded). Rationing remains in place for at least three years (even if limits are not reached during those years).
- When rationing occurs, reductions in outfitter "boats per day" allocations are applied proportionally. Formulas for this are complicated, and compare outfitters' reported use in comparison to total commercial use in two of the previous five years.
- There is additional "grandfathered" historical use for multi-day trips, instructional trips, and off-season rescue training trips. This use is not reduced when rationing occurs.
- Commercial users have a within-sector pool allowing donation of unused boat-days. The donating outfitter counts them as utilization of their allocation, while the receiving outfitter gets to use those boat-days, but can't count it as part of their utilization nor to increase future allocations.
- When commercial use consistently exceeded limits and required rationing on some segments (e.g., Numbers to Railroad Bridge), outfitters wanted to "trade" unused capacity on other segments (e.g., Brown's Canyon) to the non-commercial side. Because non-commercial boaters were approaching limits in Brown's Canyon, they were amenable. Agencies supported such arrangements as long as they addressed real shifts in use or forestalled implementing a non-commercial permit system. They recognize there are limits to these strategies, and a non-commercial system will need to be developed eventually.

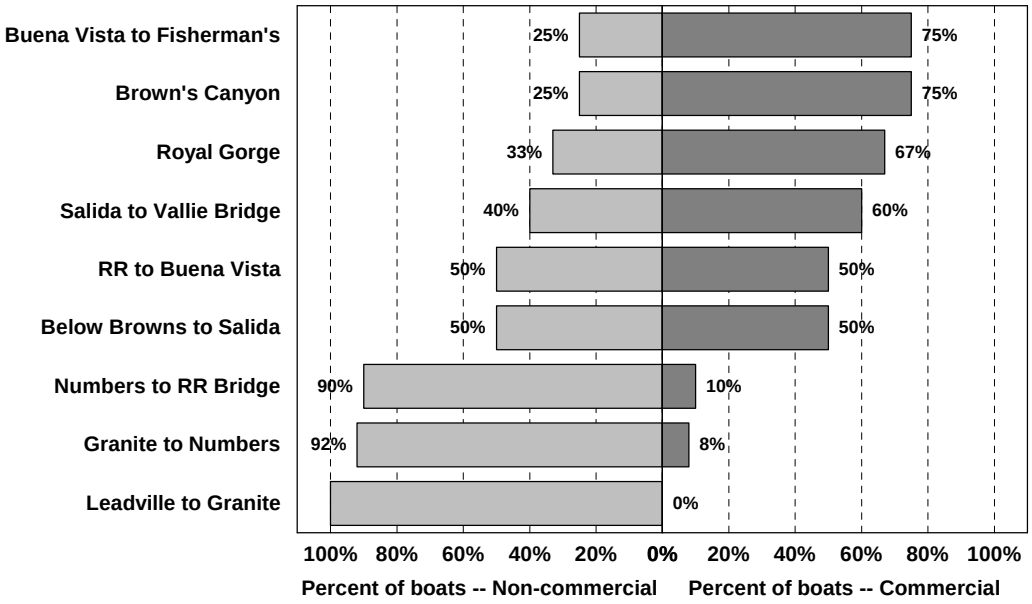


Figure 5. Commercial / non-commercial splits on various Arkansas River (CO) segments.
Notes: Non-commercial use has not exceeded limits frequently enough to implement a full permit system. Segments are ordered by their proportion of non-commercial use.

Lower Deschutes: A river-based common pool

The 97-mile Lower Deschutes River is a well-known whitewater and fishing river in Central Oregon, with a mix of day/multi-day and motorized/non-motorized use. The Deschutes is the first "common pool" on a river with substantial use; this case study reviews its capacity and allocation history and describes the new system (starting its 4th year in 2008):

- ***Multiple-agency management.*** The Deschutes was designated a State Scenic Waterway in 1970 and a National Wild and Scenic River in 1988. It is cooperatively managed by BLM, Oregon State Parks, the Confederated Warm Springs Tribes, and several local governments. The BLM and State have traded lead roles at various times, and the Warm Springs Tribes have played a critical role as advocates for use limits and a common pool system. Management decisions are made by consensus.
- ***Concern about increasing use and impacts.*** Boating use on the Deschutes grew from about 40,000 boater-days per year in the mid-1970s to 100,000 by the mid-1980s, and over 150,000 in the 1990s. Some impact problems accompanied these increases, and concern over capacity issues led to studies and planning efforts, including a Governor's Task Force (1980-81), a state legislature-mandated capacity study (1986-87), a BLM-lead river management plan (1991-93), a study of potential reservation system options (1995), a supplement to the river management plan (1997), and a new study of use and impacts due in 2008. These efforts have consistently found or acknowledged that use and impacts were too high at certain times and places, and that limits would become necessary if use continued to increase.
- ***Deschutes River capacities.*** The 1993 plan defined standards for key indicators and linked them to capacities for weekends (Friday-Sunday) and weekdays on different segments.

Daily use limits range from 325 boaters per day (weekdays, Segments 3 and 4) to 550 (weekends, Segment 1) to 1,700 (weekends, segment 2). Each of the segments also has seasonal use limits.

- ***Use levels trigger limits.*** Despite indirect management actions to control impacts and reduce peak use levels, capacity triggers established in the 1993 plan were exceeded in the early 2000s. The 1997 supplement to the plan called for a common pool use limit system when that happened, but agencies delayed implementation, hoping to reduce use or impacts with less costly and controversial actions. However, a 2003 lawsuit filed by two private boater organizations (Northwest Rafters Association & National Organization for River Sports) forced the issue, leading to a 2004 settlement, initiating the use limit system in 2005.

- ***A history of user fees.*** The Deschutes has had a "required but unlimited" boater-pass system since the late 1970s. With passes available from over 50 vendors and agencies, the fees have been used to support river patrols; develop launches, campsites, and vault toilets; and assist with land purchases. In the mid-1990s fees were raised on weekends (from $2 to $8) to help distribute use more evenly through the week (and it was effective). The boater pass system also offered a "pathway" to the limited use system, because users were accustomed to required passes and the mechanisms were in place.

- ***The Deschutes River common pool reservation system.*** Boater passes must be purchased for every person in a commercial or private group for each day they will be on the river. The permit can be bought under one or more name, and at least one person from the reservation must be on the trip. Once a person has made a reservation and received a permit, they can decide whether to rent equipment, hire a guide, or outfit themselves. If the segment and date they wish to use the river is limited, the website keeps track of and reports available spaces until there are none left. Once a person purchases a pass and reservation, they can print it at home or the vendor will print it for them. A person can have only one reservation at a time (but a spouse or friend could have a second reservation).

  To accommodate different planning horizons, 50% of the spaces are released 180 days in advance of a launch, 20% 30 days before, 15% 14 days before, and 15% two days before.

  Commercial guides cannot make reservations under their own names, but can make them on behalf of clients. If at least one person is named on a reservation, an outfitter can fill the remainder of the trip (up to the group size limit, if there are spaces left on that day) without providing additional names (but fees must be paid). When the trip actually goes, at least one person on the reservation must be present and there are no refunds for cancellations.

- ***Limited implementation – so far.*** The system has been operational from 2005-2007, but triggers have required daily use limits on weekends on Segment 1 from July 1 to September 3 (550 people per day). Of the 28 days when limits were in place in 2007, actual use only reached those limits on three days. Due to high fishing use in 2007, Segment 4 weekends will also be limited from Jul 1 through Oct 15 (325 people per day) in 2008.

- ***Technological challenges.*** Development of the reservation website was expensive (possibly in excess of $300,000), primarily because it had to be developed from scratch with no existing models. Development also became entangled with unrelated Department of Interior security issues; it was eventually moved to a State of Oregon website. Finally, there are cell coverage challenges that limit the ability of rangers to access system data on-river or at launches to ensure compliance.

- ***Other compliance challenges.*** Lack of a real-time link from the field to the database limits the ability to check permits, creating a potential for counterfitting (because permits are printed from home computers and are easily modified. When improved cell coverage makes

such links available, handheld scanners will read bar codes on printed passes and quickly show if a trip is "legal." In addition, some outfitter trips have not included any of the original passengers that made a reservation.

- ***Ability to use the system.*** After initial challenges with the website, the system appears to be easily understood and working well. Agencies have received few complaints about making reservations or purchasing boaters passes, and most boaters have been unable to find space on the river (only three days on one segment filled in 2007).
- ***Primary effect: redistributing use.*** The allocation system indicates high use levels and redirects users to lower use times/segments (it occurs even when limits haven't been reached.
- ***Opinion toward the common pool.*** The system remains controversial because it does not follow the traditional split approach used on other rivers. Many commercial outfitters strongly oppose any system that does not give them the certainty of a set allocation, or the ability to sell their company with such an allocation. They have also expressed concern that the system works against anglers who may be more spontaneous (based on hatches or the previous day's fishing). Some have also reported depressed commercial use in 2007, which they attribute to an "onerous" permit system that deters "less sophisticated" commercial passengers from trying the system (Brown, 2007). However, use data shows no dramatic change in the proportion or total amount of commercial use, even as Section 2 use (which remains unlimited) is actually 20% lower than peaks in the late 1990s.

  In general, non-commercial groups appear satisfied with the system, but some wonder how well it will work if more triggers are exceeded and more days are actually limited. Re-distribution may also cause increased use on lower use days or segments which previously offered distinct low density experiences. Finally, many people are curious about how well the system will work if limits need to be implemented on high use Segment 2, where guided use is a higher proportion of total use and demand is thought to be more spontaneous.

The Deschutes common pool system has a relatively short history, applies to a limited number of days and segments, and monitoring of consequences for different user groups has been sparse. However, it demonstrates that a common pool is feasible even on a high use river, has not yet had substantial effects on commercial use, and appears to be distributing use without a sector bias.

High use launch area (Harpham Flat) on a busy weekend day on the Lower Deschutes River.

Boundary Waters: A common pool allocation system

The 1.3 million acre Boundary Waters Canoe Area Wilderness (BWCAW) has over 1,200 miles of wilderness canoe routes on lakes in Northern Minnesota, attracting about 250,000 users each year. The area was set aside for canoe-based recreation in 1926, designated Wilderness in 1964, and the Forest Service established use limits in 1966 to protect recreation experiences and control resource impacts (with further guidance provided by a 1978 BWCAW Act). The Boundary Waters' use limit system has implications for river allocation because it is often referenced as the model for a "common pool" approach. The current system and its applicability to river settings are described below:

- ***Boundary Waters use limits.*** Use limits in the Boundary Waters control overnight use through per day quotas for trip starts from entry points. There are also weekly motorized quotas for specific lakes (motors are allowed on about 10% of the lake area). About 60 entry points access overnight routes where limits apply; they are distributed over about 150 miles of rural roads. Entry point limits usually range from one to five groups per day, although some are slightly higher (seven to nine per day) and three are much higher (14, 18, and 27). Groups are limited to four canoes or nine total people. Once a trip has launched, there are no limits on length of stay (most groups stay less than a week).
- ***A common pool approach.*** Permits are available to individual trip leaders (or up to three alternate trip leaders) and are not controlled by outfitters (although they can apply on behalf of clients). Once a person receives a permit, they can decide to hire a guide, rent outfitter equipment, or use their own equipment. If guides accompany a trip, they and their boats count in the group size limits.
- ***Primary distributions: a pure lottery.*** Some entry points are more popular, and often reach their limits during peak summer periods, so a lottery was developed to distribute use from May 1 to September 30. Applications are taken from December 1 through January 15 via internet or mail (although this is being phased out) through a contracted reservations service (Reserve America). Over 90% are made through the internet. Applicants can specify a first and second choice entry point and date. In 2006 there were about 8,100 applications and 81% received permits for one of their two choices, a much higher success rate than lottery rivers described in this report.
- ***Secondary distributions: A web/phone reservation system.*** After the lottery is completed in January, Reserve America takes reservations for remaining starts. Because there are so many entry points, most users can find something even in peak season, but they may have to settle for second choices.
- ***Permit pick-up.*** All permits (from the lottery or reservation) must be picked up in-person by a trip leader (or alternate) from a Forest Service or "cooperator" permit station (there are roughly 60 of these in the area). Applicants must specify which station they will use (the system will otherwise default to the closest station to the entry point), and permits are non-transferable.
- ***Fees.*** Success with the lottery or a reservation costs $12, and is not refundable if the trip cancels. User fees are $16 per person per day (less for youth, with seasonal passes available for frequent visitors), payable when the permit is picked-up (or on-line starting 2009).
- ***Reasons why the common pool may work well in Boundary Waters.***
    - The Boundary Waters does not require advanced boating or route-finding skills (although managers encourage it to prevent Search and Rescue incidents). Most people don't need

or want a guide, although guides are sometimes hired for their fishing expertise. Because there appears to be low demand for such guided trips (and high demand for "partially outfitted" trips), obtaining a guaranteed allocation for guided trips has not been a priority for the outfitting companies.

- Group sizes are small compared to most rivers (the limit is nine, but the average size is four), which makes "tour trips" (combining users that don't know each other) challenging for outfitters to organize. The "culture" of Boundary Waters focuses on small group trips with friends and family, and relatively few resorts combine guests.
- Most outfitters provide a range of services from "partial outfitting" (boats and food) to "complete outfitting" (all equipment and food) to "guided complete outfitting" (where a guide accompanies the trip, and usually cooks). This means outfitters can profit from any kind of trip (and don't require an allocation or special access to ensure business success). This range of services grew "organically" with use levels over the years, and most outfitters (with a few exceptions) are relatively small businesses. About 54 commercial outfitters and 24 not-for-profit organizations (e.g., youth camps) provide services in the BWCA.
- Because some entry point starts are almost always available, the permit system essentially functions as a way to distribute use geographically and seasonally rather than turn people away (although permits for lakes that allow motorized use are highly competitive). When supply is in rough balance with demand, there is less monetary value in a commercial allocation.

- ***Reasons why Boundary Waters may not be a good allocation model for some rivers.***
  - There are few backcountry rivers with so many access points and route options; Boundary Waters is more like land-based backcountry permit systems (e.g., Yosemite, Grand Canyon, Denali, Muir Wilderness). Access to the most popular routes may be limited, but users can usually find other areas where access is available. Use limits on rivers are more likely to completely displace unsuccessful applicants, so the "stakes" are arguably higher.
  - There are few rivers where group sizes are small, tour trip commercial use is infrequent, and outfitters can profit from rental services or fully guided trips. However, rivers with small groups, easier whitewater or flatwater, and rental businesses might be good candidates for a "Boundary Waters-like" system. Potential examples include Nebraska's Niobrara, the Upper Delaware, and Arkansas' Buffalo National River.
  - Because outfitters can apply for entry point starts on behalf of their clients (or potential clients), it is possible to inundate the lottery with commercial applications for popular dates, effectively out-competing non-outfitted users. Limits on the number of applications from outfitters/cooperators for those popular dates could address this issue, but this would essentially introduce a split allocation element to the common pool (guaranteed space for the non-commercial sector).

Chapter 9. Opinions toward permit and allocation systems

For every action, there is an equal and opposite criticism.
Steven Wright

This chapter summarizes stakeholder positions about allocation, including several legal challenges, surveys of non-commercial boaters, and interviews with representatives of advocacy groups. It includes a sidebar on allocation research and monitoring needs.

Legal challenges

Allocation systems have been examined in several legal settings. A comprehensive review of legal issues is beyond the scope of this report, but major cases and their implications are listed below.

- Most legal challenges to capacity/allocation systems have been made by non-commercial boater groups opposed to split systems, the percentage of non-commercial use, or the transfer/sale of a commercial permit from one outfitter to another.
- Legal challenges often start with a simple appeal of an agency action (e.g., a permit transfer between outfitters, allocation decisions in a river management plan). However, a few cases have begun when a non-commercial boater was cited for a "protest float," then disputed the permit requirement on the grounds that the allocation system was unlawful.
- ***Legality of the Grand Canyon split allocation system.*** This contested the lawfulness of split allocation systems focused on the Grand Canyon in the late 1970s. Consolidating two cases (Wilderness Public Rights Funds vs. Kleppe et. al. 1976; Eiseman et. al. vs. Andrus et al., 1977) when it went to the 9th Circuit Court of Appeals (Wilderness Public Rights Fund vs. Kleppe, 608 F.2d 1250, 1979), it supported agency discretion to establish such a system. However, the court also established a standard for assessing particular splits, noting that percentages must be "fairly done." During the course of the trial, the NPS adjusted Grand Canyon's user-day split from 92:8 (favoring commercial use) to roughly 70:30. The court implied that it might have overturned the first split.
- ***Legality of the Rogue River split.*** This case (U.S. vs. Garren, 893 F.2d 208; 9th Circuit, 1990) focused on whether a 50-50 split system on the Rogue violated an "equal protection" standard because it did not assess potential demand between the two sectors. As with the Grand Canyon case (above), the court ruled in favor of agency discretion to develop this split (without evaluating the actual demand).
- ***Legality of commercial-only capacities.*** Non-commercial groups appealed agency plans on the Grand Ronde / Wallowa and Sandy Rivers (both in 1997) for not specifying a precise split (only commercial use was limited, so the eventual split was left open-ended). The plaintiff apparently wanted the agency to declare a split favoring non-commercial use because existing non-commercial use was much higher than commercial use). However, both appeals were denied; agencies appear to have discretion to institute commercial-only systems and reserve specific allocation decision-making for the future.
- ***Implementation of limits and a common pool on the Deschutes.*** Deschutes River Public Outfitters (1996) appealed 1993 river management plan capacities and motorized limits, claiming that they reduced existing use (which should be "grandfathered"). The appeal was denied, suggesting that agencies have discretion to reduce existing use in capacity decision-

making. Later, non-commercial groups sued in 2004 to force the BLM to implement those use limits and a common pool allocation system as specified in the river management plan (use levels had exceeded defined levels on several segments). The case never went to trial, but a settlement led to a common pool system for one segment, which is now being expanded to a second (see case study in Chapter 8).

- ***The legality of permit transfers on the Rogue.*** Non-commercial boaters administratively appealed two commercial permit transfers in recent years (Greenbaum, personal communication, 2007). The appeal would have tested agency standards for assessing whether sales between outfitters included the monetary value of allocations. The appeal was denied, but did not assess the merits of the case; the administrative court found that the non-commercial boaters did not have "standing" because they could not show "injury" (regardless of the commercial transfer, use would remain in the commercial sector under a legally authorized split).
- ***Grand Canyon allocation, 2006.*** Four wilderness-oriented groups sued to overturn parts of the 2006 Grand Canyon river management plan (River Runners for Wilderness et al v. Alston et al., 2007). One of many issues contested was the fairness of the new user day splits (nearly 50-50 in user-days). In district court, summary judgment was ruled in favor of NPS on all counts, including the discretion to set allocations in a split system. However, the wilderness groups have appealed this to the 9th Circuit (as of January 2008).

Interviews with national and regional stakeholders

> ***The first lesson of economics is scarcity: there is never enough of anything to fully satisfy all those who want it. The first lesson of politics is to disregard the first lesson of economics.***
>
> Thomas Sowell

We reviewed available information (e.g., web pages and comments during planning efforts) and conducted interviews with several national and regional stakeholders involved in river allocation. The goal was to characterize positions about various allocation approaches and systems. The following summaries are not intended to be exhaustive, definitive, nor cover all the organizations that may have addressed allocation over the years, but rather to show the range of opinion. Information is organized alphabetically. Information sources and links to websites with more information about these organizations and their positions are listed in Appendix B.

America Outdoors

American Outdoors (AO) is a national trade organization representing about 550 outfitter and guide companies "in policy-making to maintain access to recreation resources while pursuing a goal of responsible shared use" of natural areas. It has advocated for split allocation systems that provide allocations to the commercial sector and individual outfitters. AO also supports agency transfers of permits when an existing outfitter sells an operation to a new outfitter. David Brown, Executive Director of AO, states that "we have never supported the sale, per se, of allocations, but we have supported transfer of permits subject to agency approval of the buyer with oversight and transfer of assets. The agency has the authority to approve or reject the transfer if there is no value to the business." AO opposes bid-prospectus systems for distributing allocations. It has not taken positions on allocation systems in the non-commercial sector.

AO has provided comments on many river management plans and is active in national policy issues through congressional and agency contacts. It has not been involved in allocation-related

lawsuits, but has supported outfitters who have appealed agency allocation decisions. Recent allocation-related comments have focused on: (1) criticisms of the Deschutes common pool system for not providing scheduling certainty for commercial trips, and (2) opposition to some components of proposed Forest Service policies regarding special use permits. At the time of the interview, AO supported many components of the proposed Forest Service policies, but had some concerns about others. As David Brown noted, AO believed "providing lowered operating standards to holders of temporary permits was inappropriate…especially since the goal was to serve children. Agency officials once stated publicly they had no intent of qualifying applicants for temporary permits authorized in the new directives when that is clearly required by the Code of Federal Regulations. Many organization and institutions sell trips to the general public. AO believes those groups should meet the same basic qualifications as other outfitters."

American Whitewater

American Whitewater (AW) is a national non-profit organization focused on conservation of, and access to, whitewater rivers. It has about 8,000 members and about 165 affiliate local paddling organizations. It has advocated for non-commercial access, but does not "automatically" advocate for any allocation approach, and has supported both common pool and split systems for individual rivers. It has published a draft "white paper" on capacities, permits, and allocation (Robertson, 2004), but some positions continue to be debated among staff and board members as comments for specific river management plans are developed. With that caveat, important "principles" from the "white paper" and discussions with staff suggest AW generally supports the following capacity/allocation positions:

- Agencies should use or test "passive controls" or other non-capacity actions before relying on use limits via a permit system. "Self-regulation" or "natural constraints" on use (e.g., flows, difficulty, geographic location) may accomplish use limitation goals on many rivers. In other cases capacities may need to be specified and controlled through a permit system.
- Commercial outfitter allocations should not unfairly limit non-commercial access, but AW is not opposed to commercial use and encourages "a broad spectrum of outfitting services."
- Commercial outfitting permits should be awarded by merit, reviewed at regular intervals, and should not be "assets" that can be bought or sold.
- AW generally supports common pool systems because access to a public river should not be purchased from a commercial outfitter while those without the money or inclination must wait or compete in lotteries. However, AW has supported split systems on a case by case basis, and has not always advocated a common pool approach (e.g., AW supported a split in the 2006 Grand Canyon planning effort).
- Agencies should involve the non-commercial boating community in developing or evaluating non-commercial permit systems.
- If there is a split system, unused commercial use should be available to non-commercial boaters.
- With split systems, AW has recently supported weighted lotteries that favor "unsuccessful" applicants over unweighted lotteries or other systems that favor returning paddlers. However, it also opposes "penalizing" trip leaders and repeat users for recent or repeat trips because these individuals' cultural, historic, logistic, and safety experience can improve trips.
- It may be acceptable to have different commercial and private group sizes.

- In evaluating specific systems on specific rivers, AW considers factors such as capacity goals, commercial vs. non-commercial demand, resource impacts, non-boating use, types of experiences, hydrology, and predicted impacts of alternative systems.
- AW has debated trade-offs of allowing commercial outfitters to "control" public land sites to assure site stewardship and enhance trip experiences.
- AW supports greater standardization of the nation's river permitting systems.
- AW has concerns about considering commercial boat rentals as non-commercial use (which may count against non-commercial allocations), but has taken different positions for different types of rivers (e.g., it supports rentals included with commercial use on the Youghiogheny, but does not require the same for Grand Canyon).
- Permit application processes should be simple and efficient to use; most should be accessible via phone or the internet.
- Fees should be low or non-existent, and if required, they should apply to all users.

National Organization for River Sports

The National Organization for River Sports (NORS) is a national non-profit with about 5,000 members. It focuses much of its attention on navigability and related public access rights, but has also been active in allocation issues. NORS has been a sharp critic of split allocation systems for favoring commercial passengers over non-commercial applicants, creating monetary value from commercial allocations, and "making commercial passengers pay for access above and beyond outfitter trip costs and reasonable profit." Recognizing that split approaches have been ruled lawful, NORS points out that courts still require allocations to be "fairly made pursuant to appropriate standards" and cannot unfairly deny non-commercial use if commercial space is plentiful (citing the Wilderness Public Rights Fund vs. Kleppe case, 1979). NORS has also noted that these cases tend to frame allocations as being about proportions or the volume rather than price of access.

NORS does not believe that a common pool (also labeled a "single" or "no allocation" approach) is the only "lawful and moral" alternative to a split system, although it was party to a 2004 lawsuit and subsequent settlement that led to the Deschutes common pool. Although NORS claims agencies should be responsible for developing their own "lawful" systems, it has identified several concepts (aside from common pools) that might be used in conjunction with a split approach (NORS, 2008):

- Adjusting the split based on periodic large-scale demand studies.
- Adjusting the split based on annual analyses of unused allocation (which could be either permanently or temporarily assigned to the other sector).
- Employing a "travel industry reservation model" which establishes initial blocks for commercial use, but reduces that based on actual reservations and makes the surplus available to others.
- Conduct a financial analysis of commercial trip costs and regulate prices equal to actual costs plus a reasonable profit.
- Limit the number of outfitters and commercial trips to a low number that ensures some commercial trips are available, then allocate most use to a common pool (allowing those who get the permits to go with or without a guide).
- Use reservations in the non-commercial sector so users will know the time they will have to wait for access to the river to "reduce the current pressure to pay a commercial operator for access rights."

- Eliminate outfitter charges for access on "support trips" (where outfitters provide a small number of boats or guides only) beyond costs and reasonable profit.

NORS recognizes that any of these would reduce profit in the commercial sector. Although they have joined lawsuits and may initiate others in the future, they most often comment on specific river plans (including Rogue, Deschutes, Dinosaur, Middle Fork/Main Salmon, and Grand Canyon in the past). It is also completing a book, *Public Rights on Rivers*, that will include sections about allocation issues.

Grand Canyon Private Boaters Association

The Grand Canyon Private Boaters Association (GCPBA) was established in 1996 to advocate non-commercial river runner access in Grand Canyon and other regional river, support Wilderness designation for Grand Canyon National Park, and reform commercial river concessions on public lands. It has advocated for common pool systems or splits favoring non-commercial users in the Grand Canyon and other southwest rivers. GCPBA offered extensive comments about allocation issues during recent Grand Canyon planning, but joined with AW and GCROA to support the existing split system (but with higher non-commercial use in the winter and shoulder seasons so user-day allocations in the two sectors are similar). The final 2006 Grand Canyon plan followed this joint recommendation, and GCPBA has supported most elements of the new plan (and intervened in favor of the NPS in the recent lawsuit over the plan).

Grand Canyon River Outfitters Association

The Grand Canyon River Outfitters Association (GCROA) represents the 16 outfitters in the Grand Canyon and has advocated for the existing split allocation system and a permit transfer policy that guarantees allocations follow outfitter sales. In the recent Colorado River Management Plan (CRMP) revision, GCROA was part of a joint recommendation with GCPBA and AW to maintain the existing split approach and add non-commercial use. However, the recommendation also required removal of an adjusting split and all-user registration concepts proposed in the draft plan. The final CRMP closely followed this joint recommendation, and GCROA have supported most elements of the new plan (and the NPS position in the recent lawsuit contesting the plan).

GCROA has not taken positions on other allocation issues outside Grand Canyon, but GCROA has been interested in improvements to the Grand Canyon non-commercial distribution system. It favored a "real people, real dates" reservation system to improve the old waiting list system (claiming that it would mirror the reservations distribution system in the commercial sector), but has also supported replacing the old waiting list system with the new weighted lottery.

Grand Canyon Guides Association

The Grand Canyon Guides Association (GCGA) represents guides in the Grand Canyon, who have often had a voice independent of the outfitters for whom they work. GCGA does not have an official allocation policy, but provided extensive comments during the CRMP planning process. It supported a 50-50 user day split, but preferred an alternative that would achieve this without increasing overall use (they were willing to "move" some use from commercial to the non-commercial sector). It also supported changes in the non-commercial allocation system, preferring a weighted lottery, but supporting other mechanisms allowing "multiple pathways" to a permit. GCGA also advocated offering cancellations to a "runner-up" group, making everyone on a trip a potential trip alternate, and strong penalties for late cancellations.

Grand Canyon Wilderness Alliance

The Grand Canyon Wilderness Alliance (GCWA) is a coalition of 22 national and regional environmental organizations that provided extensive comments for the recent Grand Canyon plan revision (2006). While focused on enhancing wilderness in the river corridor (particularly removing motorized rafts and helicopter access), GCWA also advocated a more "fair and equitable" allocation system. Pointing to the ease of purchasing a commercial trip relative to the "20 year wait" on the non-commercial side, it advocated reductions in commercial use and an independent assessment of the "necessary" commercial services that would distribute use based on actual demand. Based on plan comments, the Alliance appears willing to accept an adjusting split system, but did not believe the NPS "all user registration" program would work because the two sectors were not "registering" in the same systems. It also opposed NPS "safeguards" to allow limit the amount of adjustment in any given year or guarantee that either sector would not fall below 40%. GCWA also supported transitional use of a "hybrid common pool / split" approach, and a separate allocation for educational, youth, or non-profit groups.

Northwest Rafters Association

Northwest Rafters Association (NWRA) is a regional organization of non-commercial boaters has advocated common pool approaches to allocation, but has also supported 50-50 distributions or splits favoring non-commercial users. NWRA has worked with NORS in appealing river management plans that limit commercial use without specifying splits (especially when non-commercial use is high). It sued the BLM to force implementation of the Deschutes common pool system, and NWRA members have participated in working groups that have helped shape the Deschutes river management system.

River Runners for Wilderness

River Runners for Wilderness (RRFW) is a regional non-profit that represents non-commercial boaters and wilderness advocates; it has focused much of its attention on Grand Canyon issues. It supports increasing access for non-commercial boaters, but has advocated lower overall use, and elimination of motorized and helicopter use (both of which are largely associated with commercial use). RRFW is the lead plaintiff in a lawsuit to overturn the 2006 Grand Canyon plan on several issues, but a District Court summary judgment ruled in favor of the NPS plan. RRFW announced plans to appeal this to the 9th Circuit in January 2007. RRFW has also offered comments on other river plans and national policy initiatives (e.g., the recent Forest Service proposed regulations for special use permits).

Individual non-commercial boaters

Individual non-commercial boaters (e.g., John Garren of Portland; Michael Greenbaum in the McKenzie River valley) have occasionally launched appeals or "protest floats" designed to legally test aspects of allocation systems. In some cases, these efforts have been associated with non-commercial organizations (e.g., NORS, NWRA); in other cases, they have acted independently.

Surveys addressing allocation systems

Two surveys led by American Whitewater offer interesting information about non-commercial boater attitudes toward allocation issues in Grand Canyon (AW and GCPBA, 2002) and on several capacity/allocation systems nationwide (Westerfield & Colburn, 2006). Both surveys were conducted on-line with "non-scientific" sampling (respondents were self-selected in response to announcements posted on several message boards or emailed to AW membership). With this major caveat, "results" may reflect some opinions in the non-commercial boating community.

2002 AW and GCPBA Grand Canyon Planning Survey

AW and GCPBA conducted this survey in summer 2002. It was available on-line for about one month; announcements were made to AW and GCPBA members and on message boards. In all, 857 people completed surveys (41% were AW members and 20% were GCPBA members). NPS did not participate in the survey, and the lack of defined sampling procedures means there is no way to determine the "representativeness" of the "results."

- ***Profile of the sample***. 55% of respondents had floated the Grand Canyon. Of those who had taken trips in Grand Canyon, the average "most recent trip" was 4 years before. About one-quarter had taken commercial trips in the canyon.
- ***Waiting list + scheduling system.*** About 36% had been on the waiting list, an additional 36% said they would have joined if it had been shorter, and 41% said they would have eventually joined it. Nearly all (97%) found the existing waiting list unacceptable. Eighty percent said the length of the list was the primary reason they would not or had not joined it, and 42% said the $100 registration fee was too high.
- ***Preferences for application procedures.*** Respondents prefer to apply for permits via the web or email. There was less support for (in order) fax, phone, regular mail, and in-person.
- ***Preferences for distribution mechanisms.*** There was more support for reservation-based systems followed by a weighted lottery, pure lottery, and waiting list. There was little support for first-come/first-served queuing onsite. A majority (79%) preferred hybrid systems that provided two or more ways to obtain permits.

2005 AW and University of Idaho Survey

AW and UI conducted this survey in fall 2005; it was chiefly developed and conducted by Lynn Westerfield. The survey was available on-line for about one month; announcements were made to AW members and on boating message boards. In all, 736 people completed surveys.

- ***Profile of the sample.*** 72% of respondents were whitewater boaters (the rest were flatwater paddlers); results summarized here focus on whitewater boaters. Sixty-six percent were members of AW (or had been in the past); 88% were males; 88% use kayaks, 24% rafts, and 18% canoes. Sixty percent had been boating five or more years, and 69% reported boating more than 30 days per year. Thirty-four percent reported Class II-III skill, 46% reported Class IV skill, and 19% reported Class V skill. Twenty-seven percent were from the Southeast, 24% from the Northwest, and 21% from the Rocky Mountain west.
- ***Most popular rivers with permit systems.*** Respondents were asked to list the number of years they had applied for permits on several rivers; the average number of years for each river is shown in Figure 6. Only five to 20% of the sample answered questions about these

permit rivers (the rest presumably do not apply for permits and may boat elsewhere). Results roughly characterize the popularity of permitted rivers, with Grand Canyon, Middle Fork Salmon, and the Arkansas as the top three. Grand Canyon is the river that people have been applying to the longest, probably an artifact of the multi-year waiting list at the time of the survey.

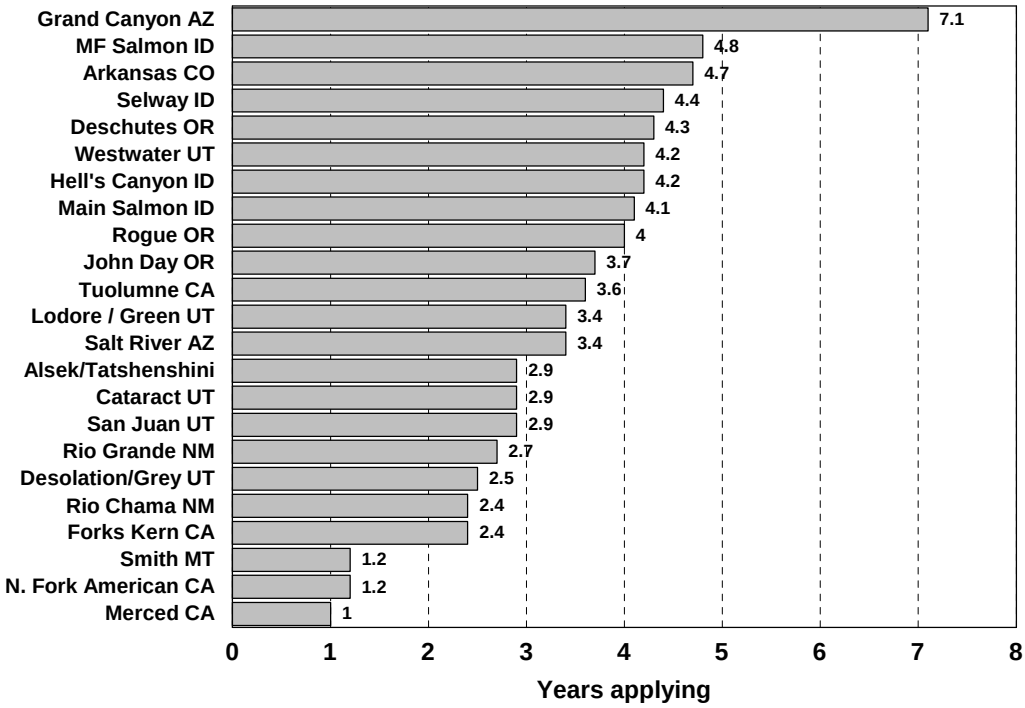


Figure 6. Average number of years applying for permits (among those who apply to any).

- ***Success rates.*** Respondents were asked to list the number of years they had successfully obtained permits to compare with the number of years they applied (Figure 7). Results characterize respondents' history of success and are interesting to compare to calculated success rates for lottery rivers (see previous chapter). As one might expect, the relative ranking of success rates is similar (e.g., the hardest permits to obtain were on the Grand Canyon, Selway, and Middle Fork Salmon), but there are a few "surprises" as well (e.g., the Main Salmon, Smith and Hells Canyon are also difficult). Also note that several rivers showed 88 to 100% success rates (although we don't know if these respondents were successful with their application, by joining other trips, or through a secondary system).
- ***Fairness ratings vs. success rates.*** Respondents were asked to rate the fairness of each system on a five point scale (1="very unfair" to 5="very fair") which can be compared to success rates (Figure 8). All except the Grand Canyon system were rated "fair" (3 or higher).
- ***Preferences for primary mechanisms.*** Respondents were asked to rate support for five different primary distribution mechanisms on a seven point scale (1="strongly oppose," and 7="strongly support"). About 60% of respondents answered these questions. Results show that first-come/first-serve or queuing was the highest rated mechanism. Among other mechanisms, reservations were rated higher than lotteries and weighted lotteries.

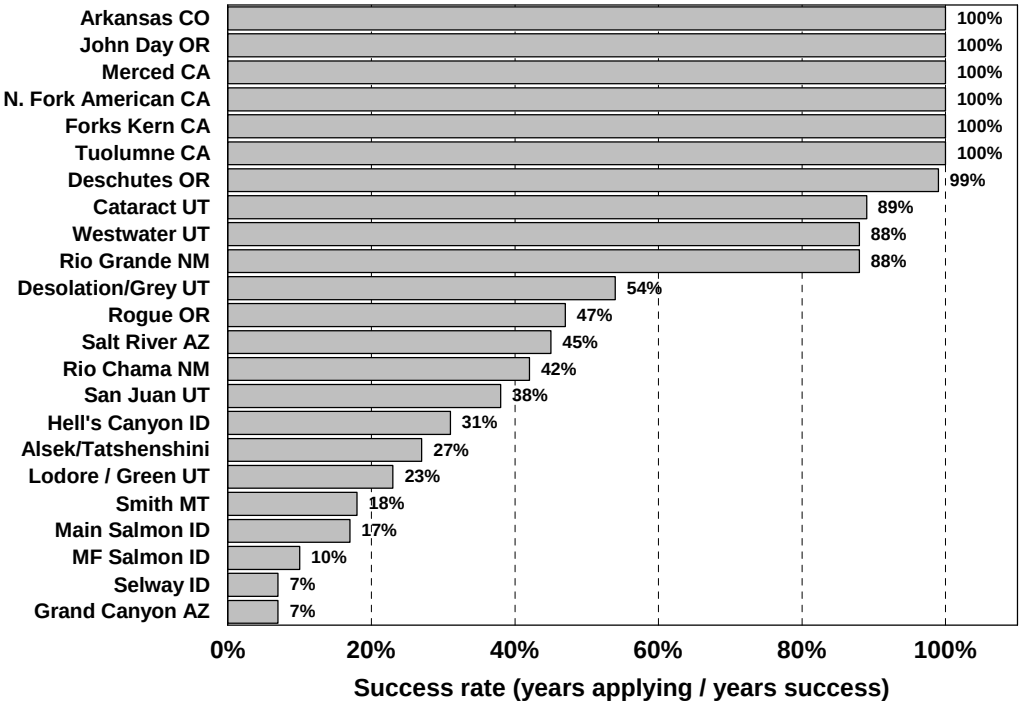


Figure 7. Success rates (years applying / years with success) for permitted rivers.

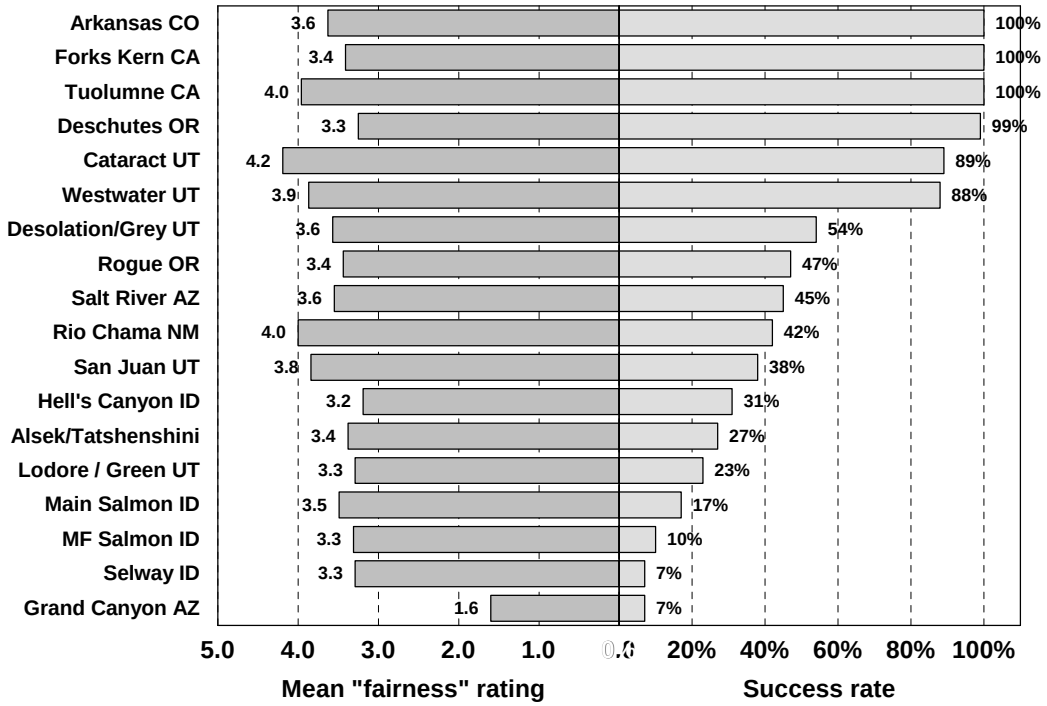


Figure 8. Comparing average "fairness" ratings (1=unfair, 5=extremely fair) with reported success rates.

Allocation research and monitoring needs

River allocation issues received research attention in the 1980s when use limit and allocation systems were being developed, but there has been less work on these issues in recent years. The topic remains complex and controversial, and additional research could help identify the consequences of allocation decisions for agencies, stakeholders, and the public. Potential research and monitoring needs are listed below:

- **Standardized allocation reporting.** Collecting and organizing information about allocation systems is difficult. Agencies generally do not collect, analyze, monitor, or report statistics about use levels on their rivers, and there is very little information about applications, success rates, cancellations, and no shows. Monitoring efforts with standardized reporting requirements would improve comparisons across systems, highlighting more effective distribution systems.
- **A national survey of private boaters about allocation issues**. The University of Idaho study on private boaters reported in Chapter 8 provided some "national" public opinion about allocation systems and distribution options. However, the study sample was self-selected and based on American Whitewater members that may over-represent certain regions (e.g., the Southeast) or types of boaters (e.g., kayakers). In addition, that survey asked only a few allocation preference questions; a more in-depth effort could explore why boaters prefer certain systems or particular elements in a system.
- **Individual surveys of specific systems.** Few agencies have surveyed users before developing allocation systems, and even fewer have assessed public opinion after systems were implemented (McNeil River study findings described in Chapter 9 are an exception). In addition to assessing overall evaluations of existing systems, future work should assess specific elements of those systems (fee structures, application procedures, cancellation "carrots" and "sticks," etc.). Other research could compare evaluations from those who did and did not obtain a permit, or identify potential users who do not participate and the barriers to participation.
- **Outfitter stability and financial health.** Impacts of permit systems on the number and financial health of outfitters will continue to be an important allocation issue. Analyses of outfitter financial information may help identify the variables that affect commercial success, and how those variables may be related to allocation systems. It would be useful to update the monetary value of commercial permits under different systems or for rivers with different characteristics.
- **Monitoring user preferences for commercial or non-commercial trips.** Relative demand for different trips is a fundamental question for split systems. For rivers with no limits in either sector, systematic use data could provide information about demand. But on rivers with capacities, demand across split sectors cannot be compared because procedures are so different. An "all-user registration" program proposed during a recent Grand Canyon planning effort would have produced comparable information about demand, but several stakeholder groups opposed the concept (perhaps fearful that more accurate demand information might not support their existing allocation). If agencies want to learn about relative demand, all-user registration programs are likely to provide the most reliable (and cost effective) data.

References

The following references include literature cited in the report as well as other allocation-related literature that provided background on the topic.

Bright, A.D. 1998. Evaluation of the Bear Viewing Program at McNeil River State Game Sanctuary: Applicant perceptions of the current and proposed permit systems. Report I for the Alaska Department of Fish and Game, Wildlife Conservation Division.

Bureau of Land Management Draft analysis of split allocation systems for the Lower Deschutes River. March 1996. Prineville District.

Bright, Alan. 2003. Evaluation of Bear viewing program at McNeil River State Game Sanctuary. Washington Sate University for ADF&G.

Brown, Keith. 2001. Masters Thesis. Planning and implementation of visitor capacities: A descriptive profile. Colorado State Univiersity, Department of Natural Resource Recreation and Tourism, College of Natural Resources. Spring 2001.

Brunson and Shelby and Jay Goodwin. 1992. Matching impacts with standards in the design of wilderness permit systems. In defining wilderness quality: the role of standards in wilderness management: a workshop proceedings. PNW Research station. GTR-305. 1992.

Cable, S. and Watson, A. 1998. Recreation use allocation: Alternative approaches for the Bob Marshall Wilderness Complex. USDA Forest Service Rocky Mountain Research Station. RMRS-RN-1. June.

Christianson, A. 2007. Personal communication from Forest Service Southern Region recreation lead.

Deitchman, B. 2003. Commercial allocation on the Middle Fork American. River Management Society News. Spring.

DiGennaro, B., B. Shelby, B. Walsh, and F. Groznik. 1995. Reservation systems for boating on the Lower Deschutes River. Oregon Parks and Recreation Department. Salem, Oregon.

Graefe, A. R., Kuss, F. R., & Vaske, J. J. 1990. Visitor impact management: The planning framework. Washington, DC: National Parks and Conservation Association. 105 pp.

Haas, G. E. (2001). A Reframing of Visitor Capacity. Parks and Recreation. 36 (7): 68-79. July. National Recreation and Parks Association, Ashburn, Virginia.

Haas, G. R. (2004). On the waterfront: Vital judicial ruling addresses visitor capacity. Parks and Recreation. September.

Harding, Ben. Comments for GC CRMP on permit / allocation systems.

Leaper, 1991. Rationing recreation river use: a question of equality and freedom of choice. Western Wildlands. Winter 10-14.

Lime, D. W. 1981. Outfitted and non-outfitted river runners – who are they and what do they think? In Recreation use allocation: Proceedings of the national conference. Reno, Nevada: pp. 51-58.

Marsh, Gary G. 2005. Secretarial Briefing Document from the BLM Director. Implementation of a common pool-limited entry permit allocation system for the Lower Deschutes Wild and Scenic River in central Oregon.

Moody, Ron. 2004. Fair Access: 'Equal opportunity' systems for public use of restricted public resources. Draft 2, August 19, 2004. Sponsored by Our Montana – Mike Penfold, Ed Parsons, and John Gibson.

Robertson, J. 2002. American Whitewater White Paper on "Permits" (DRAFT). November.

Ryan, C. 2007. Personal communication from recreation lead for Flathead River.

Scrogins, D., Berrens, R., and Bohara, A. 2000. Policy changes and demand for lottery-rationed hunting privledges. Journal of Agricultural and Resource Economics 25(2): 501-519.

Shelby B. 1991. Allocation of public access rights on western rivers. Western Wildlands: A Natural Resource Journal, 16(4): 8-12.

Shelby, B. 1981. Allocation Issues in Recreation Research. In Proceedings of the National Conference on Allocation of Recreation Opportunities on Public Land, Reno, Nevada.

Shelby, B. 1984. Estimating monetary values for use permits on western rivers. Journal of Forestry 82(2):107-109, 1984. Reprinted in Wildwater 7(1):7-8, 1986.

Shelby, B. 1985. A historical perspective on river access and allocation. In Getting on the River: The Boater's Search for Equity. Northwest Rafters Association, Portland.

Shelby, B. and M. Danley. 1980. Allocating river use. USDA Forest Service, Region 6, Portland, December.

Shelby, B. and T.A. Heberlein. 1986. Social carrying capacity in recreation settings. Corvallis, OR: Oregon State University Press. 164 p. Second printing 1996.

Shelby, B., D. Whittaker and M. Danley. 1989. Idealism versus pragmatism in user evaluations of allocation systems. Leisure Sciences 11(1):61-70.

Shelby, B., D. Whittaker, and M. Danley. 1989. Allocation currencies and perceived ability to obtain permits. Leisure Sciences 11(2):137-144.

Shelby, B., M. Danley, K. Gibbs, and M. Petersen. 1982. Preferences of backpackers and river runners for allocation techniques. Journal of Forestry 80(7): 416-419.

Shindler, B. and B. Shelby. 1993. Regulating wilderness use: an investigation of user group support. Journal of Forestry 91(2):41-44.

Stankey, G. H., Cole, D. N., Lucas, R. C., Petersen, M. E., & Frissell, S. S. 1985. The limits of acceptable change (LAC) system for wilderness planning (Rep. INT-176). Ogden, Utah: US Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Stokes, J. 1991. New wildland recreation strategies: The Flathead experience. Western Wildlands. Winter. 23-27.

Warm Springs Confederated Tribes. 1990. Statement to Deschutes River Executive Review Board on Issues Presented to the Board for Resolution. December 1990.

Welsh, Randy T. 1986. The feasibility of a centralized reservation system for western rivers. Unpublished master's thesis. Corvallis, OR: Oregon State University. 66 p.

Welsh, Randy T. 1999. A Comparison of Strategies for Rationing and Managing Use on Selected Rivers in the United States in 1986 and 1998. In Personal, Societal , and Ecological Values of Wilderness: Sixth World Wilderness Congress Proceedings on Research, Management, and Allocation, Vol. II, Proc. RMRS-P-000. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Whittaker, D. 1991. Recreation allocation issues in Alaska: Use limits in the Last Frontier. Western Wildlands: A Natural Resource Journal, 16(4): 28-32.

Whittaker, D. and Shelby, B. 2004. Allocation and non-commercial permit system options. Section in River running in the Grand Canyon: Current situation and social impacts of alternatives. Technical report submitted to Grand Canyon National Park for inclusion in the Colorado River Management Plan & Draft Environmental Impact Statement. March 2004.

Willis, D. J. and Swanson, P. J. Trends in the use of lotteries to award private river permits on selected western rivers. RMS symposium. Charleston, SC. 2000.

Appendices

Allocation systems: River by river

The following provides a list of river permit programs on North American rivers. For rivers with "full" allocation systems (those which currently limit commercial and non-commercial use), we have provided more complete information about the characteristics of each allocation system. Characteristics may include different approaches (e.g., common pool, split allocation), distribution mechanisms (e.g., lottery, reservations, priced-based auctions, etc.), type of use, year permits first implemented, and other information about its capacity – allocation system. For rivers with "partial" allocation systems (commercial limits only or non-commercial permits which are not limited), we have provided less comprehensive information.

Information in these tables were developed from interviews with resource staff or assembled from agency or NGO websites. The information is designed to highlight the major features of these systems, note innovative features, or provide other interesting facts. Assuming this report has a shelf-life of about a decade, some of this information is likely to become outdated. Fees and procedures change. The goal is to provide a starting point for river professionals interested in developing or refining their own systems.

The appendix is divided into 3 parts:

- Full allocation systems
- Notable partial or potential allocation systems (with more detailed information)
- Other partial or potential allocation systems (with less detailed information)

Note: Readers that can offer additions or corrections for these appendices are urged to contact Doug Whittaker (dougwhit@alaska.net). The authors and River Management Society intend to develop and maintain these as a "working database" into the future.

Full Allocation Systems

Alsek / Tatshenshini, Canada & Alaska

Segments	Alsek (Haines Jct.) or Tatshenshini (Dalton Post)
Miles	266 (126 on Upper Alsek or tributaries; 81 on Tatshenshini; 59 on Lower Alsek)
Typical boatable flow range	Various
Typical boatable season	Late May to early September
Whitewater difficulty	Class III-IV (V+ in Turnback Canyon on Alsek)
Designation/classification status	Champaign-Aishihik Tribal lands, Yukon Territory lands, Tatshenshini-Alsek Provincial Park in Canada, and Glacier Bay National Park.
Managing agency	Parks Canada & NPS
Type of access	Road accessible at put-ins; fly out at Dry Bay

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1982 (interim limits); 1989 (first plan); revised 2005.
Primary type of limit	Launches taking out-per day (approximately 1 per day; see below).
Other limits	Group size, some designated camps.
Capacity basis	Studies in 1983 + planning
Permit system approach	Split allocation (in 8 day bloc, 4 commercial and 4 private take-outs).
Primary distribution technique(s)	Calendar for commercial use; reservations + waiting list for private
Secondary distribution technique(s)	Reservation by phone or mail
Common pool of unused allocation	No
Use limit season(s)	Jun 1 to Aug 31
Primary distribution dates	Outfitters use a calendar system. Non-commercial users can register anytime; November mailing to registration list; December 15 deadline to request dates (can defer); winners announced January 16; cancellations available after this date to those on registration list.
Private-commercial split (goal)	50-50 launches
Private-commercial split (actual)	Close to 50-50 in most years (discrepancies due to cancellations only)
Trip leader policy	Alternates allowed.
Participant tracking / repeat user	No
Commercial transfer policy	Transfers undergo major concessions review; potential new outfitters can compete.
Waiting list	Yes, built into reservation system.
Cancellation/no show penalties	May lose ability to apply for 2 to 5 years
Application fees	$25 per registration (no additional cost for deferring 1 year)
User fees	$100 per launch
Number of commercial outfitters	9 outfitters (6 US and 3? Canadian; each country's group allocated 18 total trips).
Group size limits	15 for all trips (25 for "grandfathered" commercial outfitters).
Trip length limits	No (but no more than 3 nights in one site; most trips are 9 to 12 days long).
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Alsek launches one trip every other day (to limit impacts on bears and provide solitude). Lower Alsek take-outs from Tatshenshini are limited to one every day. 50-50 split in commercial take-outs to American and Canadian outfitters. 25% of Canadian outfitter trips to First Nation corporations. In recent years: 260+ on list; about 120 respond to mailing; but only 60 request dates and 35 to 40 receive their preferences (~60% success rate of those ready to go that year). About 5 to 6 trips cancel per year; a few may be filled by call-ins. Not all scheduled commercial trips are taken (especially in shoulder season). Total use levels per year – about 1,400 people (800 or 57% commercial).

Contact	Tom Elliot Visitor and Wilderness Management Parks Canada - Yukon Field Unit 205-300 Main St. Whitehorse, YT. Y1A 2B5	Jim Capra Glacier Bay National Park and Preserve PO Box 137 Yakutat, AK 99689-0137 (907) 784-3295

Colorado River (Cataract Canyon), Utah

Segment(s)	Cataract (Green/Colorado confluence to Lake Powell)
Miles	19 on river + 35 on Lake Powell
Typical boatable flow range	4,000 to 30,000 cfs
Typical boatable season	Year-round (but highest use form April through September)
Whitewater difficulty	Class IV (V at very high water)
Designation/classification status	National Park
Managing agency	NPS
Type of access	Road accessible (often with lake tow-outs).

Type of allocation system	Full (commercial and non-commercial)
Year of first limits	Late 1970s (?)
Primary type of limit	People per year (guides don't count)
Other limits	Number of outfitters; group sizes, trip lengths.
Capacity basis	Historical use + planning
Permit system approach	Split allocation (with some inter-sector sharing)
Primary distribution technique(s)	Commercial use by calendar; private use by call-in
Secondary distribution technique(s)	Reservations by phone
Common pool of unused allocation	Yes (about 4% of total annual use available).
Use limit season(s)	Permits required year-round; April 15 to October 15 limit season.
Primary distribution dates	Four distributions conducted each season (first in April, last in Sep) as use is monitored. Outfitters and private groups make requests and are typically granted them (because annual caps have never been reached), but trip scheduling used to minimize daily or weekly crowding.
Private-commercial split (goal)	No specific goal in recent plan; private use has never been capped.
Private-commercial split (actual)	2006 Users: 42% private, 58% commercial Private use has averaged 21% since 1969; in past 10 years it has averaged 33%.
Trip leader policy	Alternate trip leaders encouraged.
Participant tracking	No
Commercial transfer policy	Allowed; includes review of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of fees.
No show penalties	Loss of fees.
Repeat user limitations	One trip reservation at a time.
Application fees	None
User fees	$30 per launch
Number of commercial outfitters	15
Group size limits	40
Trip length limits	None
Human waste policy	Yes, carry-out required.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	Recent use is about 5,000 to 6,000 people per year; capacity is 8,000. Initial allocations to each outfitter were 365 people per year. Currently there are 15 outfitters, but some have bought other allocations (at least 3 sales). Shared pool of 315 slots available to both sectors to provide flexibility. Allocation from outfitter that went out of business was added to a shared allocation pool. Nearly all non-commercial applicants can get trips (but not necessarily preferred dates) NPS rescue rangers staff major rapids during high water (>55,000 cfs).

Contact	Canyonlands National Park 2282 SW Resource Blvd. Moab, UT 84532 435-719-2313 Information from Paul Cowan

Colorado River (Grand Canyon), Arizona

Segment(s)	Lees Ferry to Diamond Creek (226 miles)
Miles	226
Typical boatable flow range	8,000 to 45,000 cfs
Typical boatable season	Year-round (higher use from May through October)
Whitewater difficulty	Class IV
Designation/classification status	National Park
Managing agency	NPS
Type of access	Road (helicopter take-outs for some commercial trips).

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1972; major revisions in 1980-82 and 2006
Primary type of limit	Launches (1 to 6 per day depending upon segment and season)
Other limits	Annual user-days, trips at one time in canyon, group size limits, trip length limits.
Capacity basis	Historical use, studies, and planning
Permit system approach	Split allocation
Primary distribution technique(s)	Commercial use by calendar; non-commercial use by weighted lottery
Secondary distribution technique(s)	Follow-up weighted lotteries
Common pool of unused allocation	No
Use limit season(s)	Year-round
Primary distribution dates	Main lottery is generally planned to occur in May for the following year's dates. Applications accepted for one month prior to lottery. Follow-up lotteries occur when substantial numbers of cancellations become available.
Private-commercial split (goal)	User days: 50%-50% Launches: 45% private and 55% commercial People: 29% private and 71% commercial
Private-commercial split (actual)	2007 appears to be close to plan goals
Trip leader policy	Up to 2 alternates (must be named on initial application)
Participant tracking	Yes (no more than 1 trip per year)
Commercial transfer policy	Allowed, with review.
Use of overbooking	No
Waiting list	No (see discussion in case study section)
Cancellation penalties	Forfeit substantial fees.
No show penalties	Forfeit fees.
Repeat user limitations	Yes (one trip per year per person – private or commercial)
Application fees	$25; $400 fee charged if application is successful ($200 fro "small sized trips")
User fees	$100 per person due 90 days before launch
Number of commercial outfitters	16
Group size limits	32 (including guides for commercial); 8/16 for private (two different sizes)
Trip length limits	10 to 25 days, depending on season and type of trip
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	$100 late fee for participant changes before 30 days of launch. No adding trip participants within 30 days of launch. Extensive website describing the system and its numerous intricacies. Payment through federal pay.gov system. See case study in main report for additional details.

Contact	Grand Canyon River Permits Office Grand Canyon National Park PO Box 129 Grand Canyon, AZ 86023 1-800-959-9164 Information from Linda Jalbert, Steve Sullivan, and website

Colorado River (Lower Gorge of the Grand Canyon), Arizona

Segment(s)	Diamond Creek to Park Boundary
Miles	51
Typical boatable flow range	8,000 to 45,000 cfs
Typical boatable season	Year-round (higher use from May through October)
Whitewater difficulty	Class III
Designation/classification status	National Park
Managing agency	NPS
Type of access	Road (helicopter for some commercial trips).

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1989; revisions in 2006
Primary type of limit	Launches for non-commercial (2 per day); people (96) for Hualapai day trips
Other limits	Limits on overnights for continuation trips from Lees Ferry, group size limits, trip length limits, pontoon boat limits, jet boat take-outs, tow-outs.
Capacity basis	Historical use and planning
Permit system approach	Split allocation
Primary distribution technique(s)	Commercial use by calendar; non-commercial use by reservation
Secondary distribution technique(s)	Call-in reservation
Common pool of unused allocation	No
Use limit season(s)	Year-round
Primary distribution dates	On-going reservation
Private-commercial split (goal)	People (estimated): 22% private and 78% commercial
Private-commercial split (actual)	Unknown – plan first implemented in 2007
Trip leader policy	Up to 2 alternates (must be named on initial application)
Participant tracking	No
Commercial transfer policy	One outfitter
Use of overbooking	No
Waiting list	No (see discussion in case study section)
Cancellation penalties	Forfeit substantial fees.
No show penalties	Forfeit fees.
Repeat user limitations	Yes (one trip per year per person – private or commercial)
Application fees	Hualupai fees only
User fees	Hualupai fees only
Number of commercial outfitters	1 + Lees Ferry outfitters who take “continuation trips”
Group size limits	16 for non-commercial; 96 for Hualapai day trips; 20 for Hualapai overnight trips
Trip length limits	2 to 5 days, depending on season and type of trip
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Separate permit required from Hualapai Tribe. Applications accepted up to one year in advance. Nearly all applicants can secure a permit (but not necessarily preferred dates).

Contact	Grand Canyon River Permits Office Grand Canyon National Park PO Box 129 Grand Canyon, AZ 86023 1-800-959-9164 Information from Linda Jalbert, personal involvement with 2003-06 planning effort.

Colorado River (Westwater Canyon), Utah

Segment(s)	Westwater Ranch to Cisco.
Miles	17
Typical boatable flow range	400 to 3,000 cfs.
Typical boatable season	Limited high flow days in March and April
Whitewater difficulty	Class III (one IV-V)
Designation/classification status	National Wild & Scenic River, 1984. Wilderness. Three National Forests.
Managing agency	BLM
Type of access	Road accessible.

Type of allocation system	Full (commercial and non-commercial)
Year of first limits	1974; major revision in 2006.
Primary type of limit	People per day (guides don't count)
Other limits	Number of outfitters; group sizes, trip lengths.
Capacity basis	Historical use + planning
Permit system approach	Split allocation
Primary distribution technique(s)	Commercial use by calendar; private use by reservations (phone)
Secondary distribution technique(s)	Reservations by phone
Common pool of unused allocation	No
Use limit season(s)	Permits required year-round; commercial-private split from April 1-Sept 30.
Primary distribution dates	Outfitters have a calendar Non-commercial reservations available 2 months before the launch date. .
Private-commercial split (goal)	50-50 on users per day in Apr-Sep period (75 or 5 trips & 75 people or 5 trips). 100% private in rest of year (150 per day).
Private-commercial split (actual in 2006)	Users: 51% private, 49% commercial User days: 57% private, 43% commercial Launches: 59% private, 41% commercial Boats: 60% private, 40% commercial
Trip leader policy	Alternate trip leaders encouraged.
Participant tracking	No
Commercial transfer policy	Allowed; includes review of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of application fee
No show penalties	Unspecified
Repeat user limitations	One trip reservation at a time.
Application fees	None
User fees	$7 per person due 30 days before launch; no fee from Dec-Feb
Number of commercial outfitters	18
Group size limits	25
Trip length limits	2 days
Human waste policy	Yes, carry-out required. No scat machine.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	Office handling reservations is open by phone 8 to noon. Credit cards accepted. On-line calendar shows available launches. Up to two changes per reservation (date, group size, alternate trip leader) Cancellations 30 days in advance and fees count for credit on future launches. 90 to 94% of commercial allocation used each year (1989-2006 data). Previously used lottery + waiting list.

Contact	Bureau of Land Management Moab River Office 82 East Dogwood Moab, Utah 84532 (435) 259-7012 Information from Chad Neihaus

Lower Deschutes River, Oregon

Segment(s)	Lower Deschutes (4 segments from Warm Springs to Columbia River)
Miles	97
Typical boatable flow range	3,000 to 10,000 cfs at Moody (near Columbia); 3,000 is not a navigational limit
Typical boatable season	Floating from April-October; Jetboating allowed seasonally on 2 segments through November; year-round use possible.
Whitewater difficulty	Class III-IV (II-III on lower half)
Designation/classification status	National Wild & Scenic River, 1988. (Scenic and Recreational reaches).
Managing agency	BLM, Oregon State Parks, & Warm Springs Confederated Tribes
Type of access	Road accessible at multiple locations.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	2003 (but not every segment or day of the week).
Primary type of limit	People per day (325 to 1,700 per weekend day, depending upon segment).
Other limits	People per primary season, number of outfitters, group sizes, trip lengths
Capacity basis	Historical use + planning (with input from studies)
Permit system approach	Common pool
Primary distribution technique(s)	Reservations on website
Secondary distribution technique(s)	Reservations on website
Common pool of unused allocation	Not relevant – common pool at all times.
Use limit season(s)	As of 2007: summer weekends on Segment 1 and Segment 4 only.
Primary distribution dates	"BoaterPasses" required year-round; proportions of permits released before each date.
Private-commercial split (goal)	Not relevant – Common pool system.
Private-commercial split (actual)	Not relevant – Common pool system.
Trip leader policy	Alternate encouraged; one person on original reservation required on trip.
Participant tracking	No
Commercial transfer policy	Allowed after in-depth analysis; some criteria used to assess value (see case study) New purchases given with consideration of existing permit holders.
Use of overbooking	No
Waiting list	No
Cancellation penalties	No refunds given (credit for other trips if before 14 days).
No show penalties	Individuals are not allowed to reserve in next year.
Repeat user limitations	None. Only one reservation per name at a time…
Application fees	$1.95 per reservation up to 3% of total transaction (whichever is greater).
User fees	$2 per person per day; $8 per person per day on peak weekends
Number of commercial outfitters	104 (mix of whitewater and angling companies; 17 motorized); long range goal is 80.
Group size limits	16 on Segments 1, 3 and 4; 24 on Segment 2.
Trip length limits	Variable by season and trip size; longer for smaller groups. Range: 6 to 10 days.
Human waste policy	Yes, carry-out required on overnight trips; Scat machines available in two locations. Pit toilets at heavily used sites.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	On-line reservations began 2004; there were some start-up problems. Credit cards accepted for fees; no handling fees if purchased online. Additional transaction costs (venders can charge $3 per reservation). Boaters print out their own passes (agency can check via bar codes). Variable use capacities on different segments by weekdays/weekends. Weekends defined as Fridays, Saturdays and Sundays. Annual frequent user passes available; don't apply on peak weekends on Segment 1. Outfitters can make reservations on behalf of clients; 1 commercial passengers required to be on the trip. Outfitters can fill trips (up to 16/24 group size limit) once a reservation is made. Uses date of birth to identify users.

Contact	BLM Prineville 3050 N.E. 3rd Street Prineville, OR 97754 Information from Tom Mottl and Lynnette Ripley

Dukes Creek, Georgia

Segment(s)	DNR-managed segment.
Miles	5
Typical boatable flow range	Not applicable -- fishing-only stream.
Typical boatable season	No boating allowed.
Whitewater difficulty	Non-boating river.
Designation/classification status	Georgia State Park
Managing agency	Georgia State Parks
Type of access	Trails.

Year permits first limited	1994
Primary type of limit	Anglers per session; one or two sessions per day on Wed., Sat, and Sun.
Other limits	Year-round catch and release fishing only (barbless flies).
Capacity basis	Planning; professional judgment.
Permit system approach	Common pool.
Primary distribution technique(s)	Reservations by phone for individuals.
Secondary distribution technique(s)	First-come/first-served.
Common pool of unused allocation	Common pool for all users (guides count as a user, but cannot make reservation for client).
Use limit season(s)	Year-round.
Primary distribution dates	n/a
Private-commercial split (goal)	n/a
Private-commercial split (actual)	n/a
Trip leader policy	Not trip leader; one person can reserve for party of three.
Participant tracking	No
Commercial transfer policy	n/a – guides can accompany clients as a user but do not control allocation.
Use of overbooking	No
Waiting list	No
Cancellation penalties	None
No show penalties	None
Repeat user limitations	None
Application fees	None
User fees	$2 parking fee.
Number of commercial outfitters	Unknown (many)
Group size limits	3 individuals per party; up to 15 anglers per session.
Trip length limits	Half day sessions in spring/summer/fall, full day sessions in winter.
Human waste policy	n/a – day use area
Fire ring policy	n/a – day use area

Other capacity/allocation features	Former private land parcel converted to a State Park unit (conservation area). Capacity is an “at one time” estimate based on perceived angling quality criteria. Unknown cancellation rate.

Contact	Smithgall Woods Conservation Area-GA DNR (706) 878-3087 Information from Jeff Durniak, GA DNR (regional fisheries lead)

Green River (Desolation & Gray Canyons), Utah

Segment(s)	Sand Wash to Swasey's Rapid (Green River)
Miles	84
Typical boatable flow range	700 to 30,000 cfs
Typical boatable season	April to November in most years (sometimes March); high use from May to August
Whitewater difficulty	Class II-III
Designation/classification status	None.
Managing agency	BLM
Type of access	Road access at ends.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1979 for all users (but commercial permits before this date)
Primary type of limit	Launches per day (6 per day in high use period; 2 per day in low).
Other limits	Number of outfitters, group size limits, 9 day maximum trip length.
Capacity basis	Historical use + studies + planning.
Permit system approach	Split allocation (but allows privates to use unused commercial launches, and vice versa).
Primary distribution technique(s)	Reservations by phone for privates. Commercial launch calendars.
Secondary distribution technique(s)	Reservation by phone or walk-in.
Common pool of unused allocation	Yes.
Use limit season(s)	Year-round.
Private-commercial split (goal)	50-50 for user days..
Private-commercial split (actual)	Roughly 70% private and 30% commercial launches in recent years; user days are closer together.
Trip leader policy	One alternate allowed.
Participant tracking	No
Commercial transfer policy	Allowed with review.
Application fees	$20 per reservation (waived if <30 days before launch); $10 transaction fee for changes
User fees	$25 per person
Number of commercial outfitters	16
Group size limits	25 for private; 25 + guides for commercial
Trip length limits	Maximum in high use season is 9 days (most trips are 5 to 6 days).
Human waste policy	Yes, carry-out required.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	BLM takes credit cards. Previously used lottery in winter; 60% cancellation rate led to reservation system for 2007. Reservation system operates phones in am; walk-in in afternoon. Reservations available 5 months before launch date. During lottery years, Use trend is toward higher private use. Commercial use sometimes fails to use allocation; led to cross sector use. Users can only hold one reservation at a time. Cancellations >30 days before launch = credit toward future fees. Administrative trips equal about 5% of total trips on river. Previous lottery was operated manually. Current reservations availability posted on-line. Reservations must be made with a person (phone or walk-in) to increase agency-user interaction.

Contact	BLM Price Field Office 125 South 600 West Price, UT 84501 (435) 636-3623 Staff number Information from Dennis Willis

Karluk River, Alaska

Segment(s)	Karluk Lake to mouth
Miles	22
Typical boatable flow range	
Typical boatable season	June through September
Whitewater difficulty	Class II-III
Designation/classification status	USFWS refuge land
Managing agency	USFWS, ADF&G, and Koniag Inc. (Native Corporation)
Type of access	Fly-in only.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1994
Primary type of limit	Number of people (70 at one time).
Other limits	Group sizes, trip lengths.
Capacity basis	Historical use + study + planning.
Permit system approach	Split
Primary distribution technique(s)	Lottery.
Secondary distribution technique(s)	Reservations by phone or walk-in.
Common pool of unused allocation	No.
Use limit season(s)	June 16 to July 15.
Primary distribution dates	Applications allowed November 1 – December 15. Drawing in early January.
Private-commercial split (goal)	40% private and 60% commercial
Private-commercial split (actual)	~15% non-commercial vs. 85% commercial (Lower). Unspecified (Upper)
Trip leader policy	Not specified.
Participant tracking	No
Commercial transfer policy	Likely allowed; commercial use controlled through Native Corporation.
Use of overbooking	No
Waiting list	No
Cancellation penalties	No
No show penalties	No
Repeat user limitations	No
Application fees	None
User fees	None
Number of commercial outfitters	6 on Upper; 4 on Lower.
Group size limits	6.
Trip length limits	7 days.
Human waste policy	Carry-out recommended.
Fire ring policy	No.

Other capacity/allocation features	System developed through cooperative agreement between USFWS and Koniag (a native corporation). Weather delays are allowed (no penalties if you shift trip due to weather). Use unlimited outside of control season (but permits still required). Existing use is generally lower than allocated use (but some users may not get to launch on preferred dates).

Contact	Kodiak National Wildlife Refuge 1390 Buskin River Road Kodiak, AK 99615 (888) 408-3514 Information from website.

Kern River, California (Forks of the Kern)

Segment(s)	Forks of the Kern to Johnsondale Bridge
Miles	17
Typical boatable flow range	300 to 4,000 at Kernville at 60 feet per mile
Typical boatable season	Spring through mid-summer
Whitewater difficulty	Class IV-V
Designation/classification status	National Wild River (1987); Wilderness area.
Managing agency	USFS
Type of access	Trail accessible launch (2 miles); road accessible take-out

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1979
Primary type of limit	People per day (15 non-commercial) and launches per day (1 commercial <15)
Other limits	Number of outfitters, group sizes, trip lengths
Capacity basis	Historical use + planning
Permit system approach	Split allocation
Primary distribution technique(s)	Pure lottery
Secondary distribution technique(s)	Reservation by phone or FC/FS (no web-based information)
Common pool of unused allocation	No.
Use limit season(s)	153 days – May 15 thru Oct 15
Primary distribution dates	Outfitters use calendar system (1 per day, rotate through 4-5 outfitters). Private applications Mar 15 to Apr 15, results by May 1; confirm 7 days prior.
Private-commercial split (goal)	50-50 for people (assuming full use of allocation within sectors)
Private-commercial split (actual)	~60% non-commercial vs. 40% commercial (varies by years).
Trip leader policy	Non-transferable.
Participant tracking	No
Commercial transfer policy	Allowed.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Within 7 days is considered “no show” = no application in next year.
No show penalties	Not allowed to apply for one year.
Repeat user limitations	None.
Application fees	$2 non-refundable
User fees	None currently. $10 per trip proposed.
Number of commercial outfitters	5 to 4 (recent revocation)
Group size limits	15
Trip length limits	None. Most commercial trips take 2 to 3; most privates take 1 to 3.
Human waste policy	Yes, carry-out required. No scat machine.
Fire ring policy	Yes; fire pans.

Other capacity/allocation features	System was modeled after the Rogue. . Initially a call-in only system; later moved to lottery. Application is on-line – but must be mailed in. Permits entered manually; winners chosen randomly with computer program. Users indicate three choices of dates. Guides count in group size limit. Permit system (1979) came before management plan (1994). Agency produces annual report on use. Outfitters rotate equally through season. 15 person limit derived from group size limit for Golden Trout Wilderness (since 1964).

Contact	Kern River Ranger District-Kernville Office P.O. Box 9 Kernville, CA 93238 760-376-3781 Information from Sheryl Bowers

McCloud River, California

Segment	The Nature Conservancy Preserve
Miles	6 (3 available for fishing)
Typical fishable flow range	150 to 700 cfs
Typical fishable season	Late May to early September
Whitewater difficulty	Class III (but rarely boated)
Designation/classification status	Private land
Managing agency	The Nature Conservancy
Type of access	Trail access from road-based trailhead.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	Early 1980s
Primary type of limit	People at one time.
Other limits	No camping.
Capacity basis	Planning.
Permit system approach	Common pool
Primary distribution technique(s)	50% reservations + 50% first-come/first-served on-site.
Secondary distribution technique(s)	First-come/first-served on-site.
Common pool of unused allocation	No
Use limit season(s)	Year-round
Primary distribution dates	Reservations available during fishing season (roughly end of April through November) Early reservations available starting Feb.1.
Private-commercial split (goal)	None
Private-commercial split (actual)	None
Trip leader policy	Permits are per person.
Participant tracking / repeat user	No
Commercial transfer policy	Outfitter/guides do not obtain permits.
Waiting list	No
Cancellation/no show penalties	No
Application fees	Free
User fees	Free
Number of commercial guides	As many as 15 to 18 use TNC lands.
Group size limits	No
Trip length limits	No overnight camping (one cabin available for donor use).
Human waste policy	No
Fire ring policy	No

Other capacity/allocation features	On-site tags hang on a board near the only access – users keep them during their visit. Guides must have permit only if they are fishing (many just accompany their clients). Guides cannot make advance reservations (but they can direct clients to do so). Reservation tags still unused by 10 am are available for walk-in use. Use system was requested of downstream private fishing club (which donated the land).

Contact	Reservations through SF office: 201 Mission Street, 4th Floor, San Francisco, CA 94105 (415) 777-0487. Information from Dan Ransom, TNC operations manager.

McNeil River, Alaska

Segment	Mouth to McNeil Falls
Miles	2
Typical boatable flow range	Not boated.
Typical season	Late May to early September
Whitewater difficulty	Not boated.
Designation/classification status	McNeil River State Wildlife Sanctuary (state)
Managing agency	Alaska Department of Fish and Game
Type of access	Fly-in.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1973.
Primary type of limit	People for four-day blocks (10 at falls; up to 3 more "standbys" at campground).
Other limits	None.
Capacity basis	Planning + study (bear impacts).
Permit system approach	Private use only (commercial photography use by separate permit)
Primary distribution technique(s)	Lottery with repeat use rules (favors new applicants).
Secondary distribution technique(s)	Standby users (from lottery) can stay at campground and take available places to falls.
Common pool of unused allocation	Not relevant.
Use limit season(s)	June 7 to Aug 25
Primary distribution dates	Applications by March 1. Winner notification in mid-March. Payment of fees due by April 1. Refunds available for cancellations through May 15.
Private-commercial split (goal)	None
Private-commercial split (actual)	None
Trip leader policy	Permits are per person.
Participant tracking / repeat user	No
Commercial transfer policy	Outfitter/guides do not obtain permits.
Waiting list	No
Cancellation/no show penalties	No
Application fees	$25 per person.
User fees	$150 for AK residents; $350 for non-residents.
Number of commercial guides	None (ADF&G tech is the guide).
Group size limits	3 per permit.
Trip length limits	No overnight camping (one cabin available for donor use).
Human waste policy	Pit toilet available.
Fire ring policy	At campground only.

Other capacity/allocation features	185 full access permits and 57 standby permits available. Successful permittees not allowed to re-apply for 1 year (previously 4 years).

Contact	Alaska Dept. of Fish and Game Wildlife Conservation Attn: McNeil River State Game Sanctuary 333 Raspberry Rd Anchorage Ak, 99518 (907) 267-2182 Information from Larry Aumiller (former McNeil manager) and website

Main Salmon River, Idaho

Segment(s)	Wild segment (Corn Creek to Vinegar Creek)
Miles	79
Typical boatable flow range	3,000 to 50,000 cfs at Whitebird
Typical boatable season	Floating from April-October; Jetboating from February through November
Whitewater difficulty	Class III-IV
Designation/classification status	National Wild River, 1980. Wilderness.
Managing agency	USFS
Type of access	Road accessible at 3 locations; additional (rare) fly-in access

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	Late 1970s
Primary type of limit	Launches per day
Other limits	Number of outfitters, group sizes, trip lengths, groups at specific camps
Capacity basis	Historical use + planning
Permit system approach	Split allocation
Primary distribution technique(s)	Lottery in early February
Secondary distribution technique(s)	Reservation by phone (no web-based information)
Common pool of unused allocation	Yes, 30 days before launch (thus modifying actual split from goal)
Use limit season(s)	79 days – June 20 to September 7
Primary distribution dates	Outfitters use calendar system. Privates apply Dec. 1 to Jan. 31; results by Mar. 1; confirm within 3 weeks of trip.
Private-commercial split (goal)	50-50 launches per day (4+4=8). Some flexibility (e.g., 3+5 then 5+3)
Private-commercial split (actual)	Private to commercial: By launches: 64% to 36% By people: 53% to 47% (not including guides) By user days: 57% to 43% (not including guides)
Trip leader policy	No alternates allowed.
Participant tracking	No
Commercial transfer policy	Allowed; some oversight or analysis of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of application fee
No show penalties	Permit holder not allowed to apply for three years
Repeat user limitations	One trip leader permit per year
Application fees	$6 non-refundable
User fees	$4 per person per day; due 3 weeks before launch date
Number of commercial outfitters	30
Group size limits	30 for all trips (but smaller trips can take longer trips)
Trip length limits	Variable by season and trip size; longer for smaller groups. Range: 6 to 10 days.
Human waste policy	Yes, carry-out required; Scat machine available.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	On-line application process began 2007; some start-up problems. 81% of use occurs in control season. Credit cards and checks accepted for fees. Lottery operated electronically. All applicants notified after lottery (winners and losers). Odds of success for privates posted on website; about 9% over the entire year. Some camps reserved at put-in. Jetboating use managed separately from floating (historical use). Launch reductions contemplated in early 2000s planning effort; status quo remained.

Contact	North Fork Ranger District (208) 865-2725 - application requests (208) 865-2700 - Information Information from Sheri Hughes

Middle Fork Salmon River, Idaho

Segment(s)	Boundary Creek to Cache Bar
Miles	99.0
Typical boatable flow range	1,000 to 30,000 cfs
Typical boatable season	May through October
Whitewater difficulty	Class III-IV
Designation/classification status	Wild and Scenic River, 1968
Managing agency	USFS
Type of access	Road accessible on ends (and via airstrips)

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1978
Primary type of limit	Launches: 7 per day (alternating 3 and 4 for private/commercial)
Other limits	Length of stay, group size, designated camps
Capacity basis	Historical use + studies + planning
Permit system approach	Split
Primary distribution technique(s)	Lottery
Secondary distribution technique(s)	Call-in reservation, mornings only.
Common pool of unused allocation	No; only within-sector.
Use limit season(s)	May 28 through September 3 (control season; but permits required year round)
Primary distribution dates	Outfitters use calendar system. 4 rivers lottery schedule: Privates apply Dec. 1 to Jan. 31; results by Mar. 1; Confirm by Mar 15.
Private-commercial split (goal)	50-50 by launches in control season; no split (but rare commercial use otherwise).
Private-commercial split (actual)	Private to commercial (entire season): By launches: 58% to 42% (very close to 50-50 by launch in control season) By people: 37% to 63% By user days: 39% to 61%
Trip leader policy	No alternates allowed.
Participant tracking	No
Commercial transfer policy	Allowed with substantial review.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of application fee. If within 3 weeks of launch = no show.
No show penalties	3 year ineligibility to apply for permits.
Repeat user limitations	No
Application fees	$6 per permit
User fees	None?
Number of commercial outfitters	27
Group size limits	24
Trip length limits	Yes: differs for different group sizes (e.g., 8 days for <10 people, 6 days for 21-24 people)
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Lowest odds in 4 rivers systems (3 to 4% or 1 in 27 to 30 years for first choice date). 84% of use occurs in control season. Total use per year: 11,000 people and 680 trips. Campsites are designated and scheduled (at put-in) in control season. Permits for tributaries allowed (about 10 to 15 per year on average) Few cancellations and fewer no shows per year; this is a coveted trip.

Contact	USFS Middle Fork Ranger District P.O. Box 750, Challis, ID 83226-0750 (208) 879-4112-application requests Info: (208) 879-4101 Information from Sheri Hughes

Rio Chama, New Mexico

Segment(s)	BLM (overnight)
Miles	32.0 (Wild and Scenic, but an additional ~10 miles is also managed under the system).
Typical boatable flow range	1,200 to 3,000 is optimal.
Typical boatable season	March through August
Whitewater difficulty	II-III
Designation/classification status	Wild and Scenic, 1988
Managing agency	BLM (USFS operates day use segment downstream)
Type of access	Road accessible

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1988; 1990 plan.
Primary type of limit	Launches (16 per week in early season); 16 per weekend during scheduled flow releases.
Other limits	Group size, some designated camps.
Capacity basis	Historical + planning
Permit system approach	Split
Primary distribution technique(s)	Commercial by calendar; lottery for scheduled weekend releases; phone-in for weekdays
Secondary distribution technique(s)	No formal re-fill cancellations for weekends; some walk-in allowed late Saturday.
Common pool of unused allocation	Private use of unused commercial launches allowed.
Use limit season(s)	May 1 through August 31
Primary distribution dates	Lottery for scheduled weekend releases – in February
Private-commercial split (goal)	Roughly 30% commercial; 70% private
Private-commercial split (actual)	Varies widely depending on flows
Trip leader policy	Alternates allowed (with explanation)
Participant tracking	No
Commercial transfer policy	Allowed with review.
Use of overbooking	Yes
Waiting list	Yes, specify up to 3 dates; BLM notifies potential users.
Cancellation penalties	No
No show penalties	No
Repeat user limitations	Yes – no repeat applicants in same year
Application fees	$6 per application
User fees	$5 per person
Number of commercial outfitters	12
Group size limits	16 for privates (16 + guides for commercial)
Trip length limits	None
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Flow-dependent nature of run discourages advance planning. Some assigned camps for large groups (first-come first-served at ramp). 4 miles of camping closures; 2 mile wildlife buffer (no stopping for peregrine). Time of day boating hours (9 to 4) to minimize user conflicts with anglers. Confirm 2 weeks before.

Contact	BLM 226 Cruz Alta Road Taos, NM 87571-5983 505.758.8851 River Information Recording: 888.882.6188 Information from Mark Sundin

Rio Grande, New Mexico

Segment(s)	10 segments with limits (including two high use segments: Lower Taos Box, Racecourse).
Miles	80
Typical boatable flow range	Various
Typical boatable season	Possible year-round in wet years; most occurs spring through early fall.
Whitewater difficulty	Class II-V (various segments)
Designation/classification status	National Wild and Scenic River, 1968 (original river) and 1994 additions. Wild, scenic, and recreational segments.
Managing agency	BLM
Type of access	Many road accessible launches. Some hike-in headwaters access.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	2000 (with some commercial use limits in previous years)
Primary type of limit	People per day for non-commercial use (varies by segment, day, season). People or launches per day for commercial use (varies by segment and season). Some examples: 1 or 2 launches a day on four low use segments. 150 or 200 people (private) per weekday/weekend + 8 commercial launches in Taos Box 1,050 people per day on Racecourse (600 commercial)
Other limits	Launches per day for some segments; number of outfitters, group sizes.
Capacity basis	Historical use + planning.
Permit system approach	Common pool on low use segments. Split allocation on higher use segments.
Primary distribution technique(s)	Reservations for common pool segments. Commercial launch calendars.
Secondary distribution technique(s)	Reservation by phone or walk-in.
Common pool of unused allocation	Not across sectors for split segments. Commercial has a within-sector common pool for Racecourse.
Use limit season(s)	Year-round.
Private-commercial split (goal)	Examples: Taos Box: 45% commercial (weekends); 68% commercial (weekdays) Racecourse: 80% commercial; 20% non-commercial
Private-commercial split (actual)	Various and flow dependent; private use is generally lower than limits at present.
Trip leader policy	Non-transferable.
Participant tracking	No
Commercial transfer policy	Allowed to existing outfitters; includes analysis of sales.
Application fees	None
User fees	None
Number of commercial outfitters	13 on lower Gorge segments; 9 on Upper Gorge segments.
Group size limits	16 on most segments for privates; 16, 21, 32, and 40 for commercial use on various segments (or for different seasons/types of days).
Trip length limits	Mostly day and one night trips.
Human waste policy	Yes, carry-out required.
Fire ring policy	Yes; fire pans and ash carry-out required (unless not using fires).

Other capacity/allocation features	Outfitter allocations are for specific segments. Low use segments use a common pool for commercial and non-commercial. Goal is to reduce to 10 outfitters total; transfers only to existing outfitters. "Quiet zone" and limited hours through a village (Pilar). Flow-based use limits (lower use at lower flows, no use at very high flows) in one segment. "Over-limit fees." Allows outfitters to exceed group limits (by 4 people) on some segments but charges fees to remove profit incentive to do this. Common pool for outfitters on some segments; no trading otherwise. Some segments will have no allocations for specific outfitters until capacity is reached; historical use will then be used to make allocations.

Contact	Taos Field Office 226 Cruz Alta Road Taos, NM 87571-5983 505.758.885; River Information Recording: 888.882.6188 Information from Mark Sundin.

Rogue River, Oregon

Segment	Wild Section from Graves Creek to Foster Bar
Miles	34
Typical boatable flow range	1,200 to 6,000 cfs
Typical boatable season	April through November
Whitewater difficulty	Class III-IV
Designation/classification status	National Wild River, 1968 (original river)
Managing agency	BLM lead (USFS manages river below Blossom Bar)
Type of access	Road accessible on ends

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1973
Primary type of limit	People per day (60 private + 60 commercial = 120 total)
Other limits	No more than 4 commercial launches per day
Capacity basis	Studies in early 1970s
Permit system approach	Split allocation
Primary distribution technique(s)	Lottery in early February
Secondary distribution technique(s)	Reservation by phone (with web-based notification of availability); queuing at visitor center.
Common pool of unused allocation	No, but available use within sector is available to others in that sector.
Use limit season(s)	154 days; May 15 to Oct 15
Primary distribution dates	Outfitters use a calendar system. Privates apply Dec 1 to Jan 31; results by Mar 1; confirm within 10 days of trip
Private-commercial split (goal)	50-50 people by day, with some flexibility (e.g., less commercial in fall fishing)
Private-commercial split (actual)	52% private and 48% commercial by people (not including guides)
Trip leader policy	Up to one alternate can be named (but most do not).
Participant tracking / repeat user	Tracks participants, but no repeat user policy; TLs may have up to 2 pending permits AOT.
Commercial transfer policy	Allows transfers with extensive review of equipment value, client lists, business plan, etc.
Use of overbooking	Yes – in both sectors to account for likely no shows/cancellations.
Waiting list	No
Cancellation penalties	No if prior to 10 days. Yes; TL cannot reapply for one year (but could join other trips).
No show penalties	Yes; TL cannot reapply for one year (but could join other trips).
Application fees	6 per lottery application; allows one date.
User fees	10 per person for each trip due 10 days before trip.
Number of commercial outfitters	46
Group size limits	30 for commercial, 20 for private
Trip length limits	6 nights/7 days; enforced in control season; recommended at other times.
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Odds of lottery success about 14% or 1 in 7 years for first choice date. However, considerable use allocated through secondary system. In 2006: 96% of spaces assigned in calendar/lottery (both sectors); only 69% of spaces used. Of actual private use, 55% came from lottery; 45% from secondary system. Of actual commercial use, 88% came from calendar; 12% came from secondary. Private party sizes average about 5 to 6; up to 10 or 12 private launches per day. Guides are "invisible" in terms of allocation counts (but are counted for group size limits) Commercial group size categories: large=20+5, small rafting=10+3, small fishing=6+6. Each day run as a separate lottery. Manual entry of permits into lottery. BLM runs system now; previously contracted out. "Bad applicant list" if they cancel <10 days or no show = 1 year ban (can't get permit; can join other trips).

Contact	BLM Medford District - Grants Pass Resource Are 2164 N.E. Spalding Ave. Grants Pass, OR 97526 (541) 471-6561 Information from Chris Dent

Salt River, Arizona

Segment(s)	Globe to Roosevelt Reservoir
Miles	52 (32 in USFS wilderness reach)
Typical boatable flow range	300 to 3,000 cfs
Typical boatable season	March through May (depends on water levels)
Whitewater difficulty	IV
Designation/classification status	Wilderness; National Forest
Managing agency	USFS
Type of access	Road access on both ends

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1997
Primary type of limit	Launches and people (4 x 15 = 60).
Other limits	Group size
Capacity basis	Historical use + planning
Permit system approach	Split
Primary distribution technique(s)	Lottery
Secondary distribution technique(s)	Waiting list among unsuccessful applicants
Common pool of unused allocation	No
Use limit season(s)	Mar 1 to May 15
Primary distribution dates	Applications by January 15 Drawing in mid-January February starts waiting list
Private-commercial split (goal)	10 to 20% commercial ; 80 to 90% private
Private-commercial split (actual)	Varies depending upon water year.
Trip leader policy	Allows alternatives with written request
Participant tracking	Yes
Commercial transfer policy	Allows with review.
Use of overbooking	No
Waiting list	Yes – Hells Canyon model – can wait for one date.
Cancellation penalties	No; credit on user fees if 30 days in advance.
No show penalties	Loss of fees
Repeat user limitations	No
Application fees	$10 per application
User fees	$125 per trip (if successful in lottery) due 21 days before launch.
Number of commercial outfitters	3 (previously 4)
Group size limits	15
Trip length limits	3
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	No motors. Permit system required after higher use levels resulting from the modification of Quartzite Falls (illegal blasting by individuals changed only Class V rapid into Class III) Permit requires for Apache Reservation segment. Waiting list among unsuccessful applicants available to fill cancellations. Very flow-dependent use levels; lots of call-in use in wet years. Commercial companies do not solely rely on this river. Lottery odds: about 20% or 1 in 4 to 5 years. No credit cards taken.

Contact	Tonto National Forest, Globe Ranger District, 7680 S. Six Shooter Canyon Rd. Globe, AZ 85501 928-701-1477 Information from Don Sullivan and Scott McBride.

San Juan River, Utah

Segment(s)	Sand Island to Mexican Hat and Mexican Hat to Clay Hills
Miles	84 total (26 + 58)
Typical boatable flows	500 to 8,000 cfs
Typical boatable season	Year-round (but primary season from March through October)
Whitewater difficulty	III
Designation/classification status	None
Managing agency	BLM
Type of access	Road access on ends (and in middle)

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	Late 1980s
Primary type of limit	Launches and people (varies by segment/season; see below)
Other limits	Group sizes, no layovers in certain segments and seasons
Capacity basis	Historical use + planning
Permit system approach	Split
Primary distribution technique(s)	Lottery
Secondary distribution technique(s)	Phone reservation
Common pool of unused allocation	Yes – cancelled commercial trips available for non-commercial groups.
Use limit season(s)	March 1 through October 31
Primary distribution dates	Application by January 31 Lottery in February; Phone–in reservation after March 1 (for lottery applicants only).
Private-commercial split (goal)	50-50 launches
Private-commercial split (actual)	77% non-commercial launches; 23% commercial 67% non-commercial people; 33% commercial 73% non-commercial user-days; 27% commercial
Trip leader policy	Alternate allowed with explanation
Participant tracking	No
Commercial transfer policy	Allowed with review.
Use of overbooking	No
Waiting list	No
Cancellation penalties	No refunds (but credit on other BLM rivers if soon enough)
No show penalties	No refunds
Repeat user limitations	No
Application fees	None
User fees	Depends on segment and trip length (usually $12 to $18 per person)
Number of commercial outfitters	13
Group size limits	25
Trip length limits	5
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Example limit: 6 launches per day or 65 people from Sand Island in May-Jun. Must confirm 30 days before launch. Administrative trips operated in place of cancellations (there are many). Motors allowed (for downstream travel). Office hours from 8am to 12 pm for phone reservations. Must register for some popular camps. Navajo permit required to camp or hike on river left. Up to two trip size changes per application. Use levels: about 1,200 launches, 10,000 users, and 42,000 user day per year (2006)

Contact	San Juan River-BLM PO Box 7 Monticello, UT 84535 (435) 587-1544 Information from Kay Wilson

Selway River, Idaho

Segment(s)	Paradise to Selway Falls
Miles	47.0
Typical boatable flow range	600 to 20,000 cfs
Typical boatable season	May through early August
Whitewater difficulty	Class IV
Designation/classification status	Wild and Scenic River, 1968
Managing agency	USFS
Type of access	Road accessible on ends (and via airstrips)

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1980 (estimated)
Primary type of limit	Launches: 1 per day (16 of 62 days to commercial outfitters)
Other limits	Length of stay, group size, designated camps
Capacity basis	Historical use + studies + planning
Permit system approach	Split
Primary distribution technique(s)	Lottery
Secondary distribution technique(s)	Call-in reservation, business days only.
Common pool of unused allocation	Yes, if cancellations.
Use limit season(s)	May 15 through July 31 (control season; but permits required year round)
Primary distribution dates	Outfitters use calendar system. 4 rivers lottery schedule: Privates apply Dec. 1 to Jan. 31; results by Mar. 1; Confirm by Mar 15.
Private-commercial split (goal)	74% private/26% launches commercial (16 days) in control season.
Private-commercial split (actual)	Similar to goal; only 5 to 6 cancellations per year (rarely commercial).
Trip leader policy	No alternates allowed.
Participant tracking	No
Commercial transfer policy	Allowed with substantial review.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of application fee. If within 3 weeks of launch = no show.
No show penalties	3 year ineligibility to apply for permits.
Repeat user limitations	Yes; one trip per year.
Application fees	$6 per permit
User fees	None
Number of commercial outfitters	4
Group size limits	16
Trip length limits	No (most trips take 3 to 5 days)
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Low odds in 4 rivers systems (3 to 4% or one in 28 to 30 years for first choice date). Increasing low flow use at end of control season. Few cancellations (5 to 6) and fewer no shows per year; this is a coveted trip. Snow can close pass into put-in in wet years. Low flows can lead to cancellations in dry years. Cancellations are usually picked up by local boaters within minutes (several calls each morning in season). Annual use: 60 to 70 launches; 800 to 1,000 user days per year.

Contact	USFS West Fork Ranger District 6735 West Fork Road, Darby, MT 59829-9654 (406) 821-3269 Information from Linda King

Smith River, Montana

Segment(s)	Camp Baker to Eden Bridge
Miles	59
Typical boatable flow range	
Typical boatable season	April through June
Whitewater difficulty	Class II
Designation/classification status	
Managing agency	Montana Fish, Wildlife, and Parks (with USFS cooperation)
Type of access	Road access on ends.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1992 (commercial only); 1993 (all users)
Primary type of limit	9 launches per day (no more than 1 to 2 commercial, depending on day of week).
Other limits	Group sizes, designated camps.
Capacity basis	Historical use + planning.
Permit system approach	Split
Primary distribution technique(s)	Calendar for commercial; lottery for private.
Secondary distribution technique(s)	Reservation by phone (mornings only) starting March 21.
Common pool of unused allocation	Not between sectors. Outfitters can trade among themselves.
Use limit season(s)	April 1 to October 1.
Primary distribution dates	Applications accepted Jan 1. Lottery occurs in late February. Notification in early March.
Private-commercial split (goal)	By launches: approximately 88% private.
Private-commercial split (actual)	In 2006: Launches: 92% private (582) and 8% commercial (52). People: 86% private (3,894) and 14% commercial (638).
Trip leader policy	No alternate trip leaders.
Participant tracking	No
Commercial transfer policy	Allowed.
Use of overbooking	No.
Waiting list	No.
Cancellation penalties	No refund of fees.
No show penalties	Disqualified from applying in next year.
Repeat user limitations	None.
Application fees	$5 per application for residents.
User fees	Per person: $25 for residents; $50 for non-residents (various discounts for children)
Number of commercial outfitters	10 in 2006 (reduced from 14 in mid-1990s.
Group size limits	15 for private trips; 8 for “re-allocated” (secondary distribution) permits.
Trip length limits	4 nights during high use month (June 10 to July 10).
Human waste policy	Recommended; several camps have pit toilets.
Fire ring policy	Recommended.

Other capacity/allocation features	Annual use: about 3,500 to 4,000 people per year (about 600 trips). “Re-allocation” of cancelled permits limited to smaller groups sizes (8). Applications ranged from 3,000 to 4,500 since 1997 (average=3,840). About 800 are offered launches; success odds: about 20% or 1 in 4 to 5 years. Camps are designated and named; users line up to claim sites on day of launch. Outfitters are allowed one launch per day except from the last week of May through the first week of July when they are allowed two launches on Sundays and Wednesdays. About 25% of initial permits cancel (often flow-related; sometimes group consolidation).
Contact	Montana Fish, Wildlife & Parks Attn: Smith River PO Box 200701 Helena, MT 59620-0701 406-454-5861 Information from Colin Maas, Roger Semler, and Charlie Sperry.

Snake River (Hells Canyon), Oregon/Idaho

Segment(s)	Hells Canyon Dam to Pittsburg Landing; Pittsburg Landing to Heller Bar
Miles	72.0
Typical boatable flow range	6,500 to 50,000 cfs
Typical boatable season	March through November
Whitewater difficulty	Class IV
Designation/classification status	Wild and Scenic River
Managing agency	USFS
Type of access	Road accessible on ends (and at one mid-river location)

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1978
Primary type of limit	Launches: 3 private and 3 commercial per day on Wild segment; 2 private per day on Fri, Sat, and Sun scenic segment; otherwise unlimited
Other limits	Length of stay, group size, motorized use segments and times
Capacity basis	Historical use + planning
Permit system approach	Split
Primary distribution technique(s)	Lottery
Secondary distribution technique(s)	Call-in reservation, mornings only.
Common pool of unused allocation	Within 30 days of launch only.
Use limit season(s)	Memorial Day through September 15 (permits year round)
Primary distribution dates	Outfitters use calendar system. 4 rivers lottery schedule: Privates apply Dec. 1 to Jan. 31; results by Mar. 1; Confirm by Mar 15.
Private-commercial split (goal)	50-50 by launches
Private-commercial split (actual)	Private to commercial Launches: 58% to 42% User days: 62% to 38%
Trip leader policy	No alternates allowed.
Participant tracking	No
Commercial transfer policy	Allowed with substantial review.
Use of overbooking	No
Waiting list	Yes, for people who call in, for one date only.
Cancellation penalties	Within 21 days of launch = no show penalties (one year ineligibility).
No show penalties	One year ineligibility for permits.
Repeat user limitations	No
Application fees	$6 per permit
User fees	None?
Number of commercial outfitters	30
Group size limits	24 with 8 boats per group.
Trip length limits	None
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Separate commercial and private powerboat allocation system (all historical use). ~65% of user-days in primary season are powerboat (62% commercial powerboat). Best odds among Idaho 4 rivers systems (33% or 1 year in 3 for first choice date). About 69% of initial lottery dates are cancelled (but reallocated). About 20% are not confirmed (and reallocated). About 10% of non-commercial trips no show (and are not able to be reallocated). Non-motor segment Mon-Wed in alternating weeks from June – August.

Contact	USFS Hells Canyon Hells Canyon National Recreation Area 2535 Riverside Dr. P.O. Box 699, Clarkston WA 99403-0699 (509) 758-1957

Tuolumne River, California

Segment(s)	Lumsden Campground (Merals Pool) to Wards Ferry Bridge (Main Tuolomne)
Miles	18.5
Typical boatable flow range	1,000 to 8,000 cfs
Typical boatable season	April through October
Whitewater difficulty	III-IV
Designation/classification status	Wild and Scenic River, 1984.
Managing agency	USFS
Type of access	Road accessible on ends.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1975 for commercial; 1982 for all users; revisions with new river plans in 1986 and 88.
Primary type of limit	Launches and people combination
Other limits	Some designated camps, group sizes.
Capacity basis	Historical use + planning
Permit system approach	Split
Primary distribution technique(s)	Calendar for commercial; reservations for privates.
Secondary distribution technique(s)	First-come/first-served walk-ins.
Common pool of unused allocation	Not between sectors.
Use limit season(s)	May 1 through October 15
Primary distribution dates	Reservations available for privates starting Jan 1.
Private-commercial split (goal)	63% private (90 people and 4 launches) to 37% commercial (52 people and 2 launches)
Private-commercial split (actual)	Annually: 67% commercial to 33% private (private rarely reach their limit).
Trip leader policy	No alternate.
Participant tracking	No
Commercial transfer policy	Allowed with analysis.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of application fees (unless 14 days before; can use as credit for a future launch).
No show penalties	Defined as cancellations less than 48 hours; loss of remaining reservations that year.
Repeat user limitations	No
Application fees	$15 for first ten people + $2 or each additional (non-refundable)
User fees	None
Number of commercial outfitters	6
Group size limits	26
Trip length limits	3 days (2 nights)
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Must pick up permit in person. Annual use has been as high as 7,000 user days. Recent numbers of users: about 3,500 people. 3 out of 10 camps designated for commercial outfitters (and those are rotated each year). If camps are unoccupied at 4 pm, anyone can use them. Low cancellation rate. About 75% of private trips and 65% of commercial trips go as a day trip. Less than 10% stay more than 1 night. Private use reaches limits only on holiday weekends in recent years (weekday permits are easily obtained).

Contact	Stanislaus National Forest Groveland Ranger District Attention: River Permits 24545 Highway 120 Groveland, CA 95321 Information from Julie Dettman

Yampa and Green Rivers in Dinosaur National Monument, Colorado

Segment(s)	Yampa -- Deer Lodge to Echo Park (confluence with Green) then to Split Mountain. Green – Lodore to Echo Park (confluence with Green) then to Split Mountain
Miles	71 miles for Yampa trip; 44 for Green trip (shorter day run is 25 miles).
Typical boatable flow range	700 to 15,000 on Yampa; 300 to 20,000 cfs on Green
Typical boatable season	May through July on Yampa; May through September on Green.
Whitewater difficulty	III-IV on both rivers.
Designation/classification status	National Monument.
Managing agency	NPS
Type of access	Road accessible.

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	1967 (no limit); 1973 (all users); 1976 (lottery for private); 1979 revisions.
Primary type of limit	Launches per day (3 + 3 in high use; 1 + 1 in low use).
Other limits	Scheduled camps, group size limits.
Capacity basis	Historical use + study + planning.
Permit system approach	Split
Primary distribution technique(s)	Calendar for commercial; lottery for private.
Secondary distribution technique(s)	Reservations by phone (for high use dates, must have applied in initial distribution).
Common pool of unused allocation	No
Use limit season(s)	High use: starts second Monday in May; ends mid-July on Yampa, mid-Sep on Green.
Primary distribution dates	Applications available Nov 1; must be received by February 1; notifications by February 28/29.
Private-commercial split (goal)	50-50 by launches in high season: 300 each (both rivers).
Private-commercial split (actual)	Close to goal (few cancellations are unused by either sector).
Trip leader policy	No alternates allowed.
Participant tracking	Yes.
Commercial transfer policy	Allowed with concessions review.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Less than 14 days prior: one year disqualification.
No show penalties	Less than 24 hours; two year disqualification.
Repeat user limitations	No more than 1 trip during high use period per year (unless using a cancellation).
Application fees	$15 per application.
User fees	$185 for multi-day permit.
Number of commercial outfitters	11 multi-day trip outfitters (previously as high as 17); 2 offer day use trips.
Group size limits	25
Trip length limits	6 days on Green and 7 days on Yampa (camp scheduling encourages shorter trips).
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	All camps are scheduled (chosen with river office after confirmation). Must apply for one river and one date only. May be able to arrange trip length extensions (with extra fees). Odds of success in initial lottery: 5 to 6% or 1 out of 18 years. 26 to 33% of initial permits cancelled in recent years (worse in low flow years). About 25% of call-in trips cancel. About 3% of high season trips are unused. On-line application process planned for 2009. One-day segment available (and has separate system and launch timing regulations).

Contact	Dinosaur National Monument River Office 4545 Hwy 40 Dinosaur, CO 81610. Phone (970) 374-2468 Information from Judy Culver.

Lower Youghiogheny, Pennsylvania

Segment(s)	Lower Youghigheny (Ohiopyle to Bruner Run)
Miles	7.4
Typical boatable flow range	1.2 to 8 feet on gage
Typical boatable season	April-October
Whitewater difficulty	Class III
Designation/classification status	Penn State Park
Managing agency	Pennsylvania State Parks
Type of access	Road accessible

Type of allocation system	Full (commercial and non-commercial)
Year permits first limited	Late 1970s
Primary type of limit	People per day
Other limits	Number of outfitters, group sizes, timing of launches
Capacity basis	Study + planning
Permit system approach	Split allocation
Primary distribution technique(s)	Reservations by web
Secondary distribution technique(s)	Reservation by web
Common pool of unused allocation	No

Use limit season(s)	Weekends and holidays from April 1 to October 15
Primary distribution dates	Private boaters can reserve dates 9 months in advance.
Private-commercial split (goal)	50-50 people per day (960 commercial passengers and 960 non-commercial)
Private-commercial split (actual)	Unknown
Trip leader policy	Permits to individuals, not groups.
Participant tracking	No
Commercial transfer policy	Allowed; minimal oversight or analysis of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Loss of reservation fee (2.50 in past; 3.00 for 2007)
No show penalties	No
Repeat user limitations	No; seasonal pass available for local boaters with unlimited reservations allowed.
Application fees	$3 non-refundable for reservation; $3.00 for mandatory take-out shuttle to parking area.
User fees	No additional fees.
Number of commercial outfitters	4
Group size limits	25
Trip length limits	Day use river
Human waste policy	Day use river
Fire ring policy	Day use river

Other capacity/allocation features	Private use is also split between inflatables (750 people/day) and hard shell boats (210) Allocation is for prime time periods, not whether one can go boating. Time slots are on half hour and hour; launch ranger allows some flexibility. No information about number of cancellations. Seasonal pass holders (about 175) began "stockpiling" good launch slots; polite letter from agency discouraging this practice has effectively reduced it. Outfitters pay 7.5% of gross to agency. Recent outfitter sale included intangible value of access and client list. Use levels exceed 100,000 people per year. Credit cards accepted for fees through web-based state park reservation system. Shuttle bus concession used to keep private vehicles from constrained take-out area.

Contact	Ohiopyle State Park PO Box 105 Ohiopyle, PA 15470 724-329-8591 Permit information 724-329-8593 Dept of Conservation and Natural Resources staff Information from Stacie Faust

Notable partial allocation systems

Arkansas River, Colorado

Segments	Multiple segments (Leadville to Pueblo Reservoir)
Miles	148
Typical boatable flow range	Depends on reach;
Typical boatable season	April to October (shorter season for higher elevation reaches)
Whitewater difficulty	I-II to III-V on different segments
Designation/classification status	State recreation area
Managing agency	Colorado Department of Parks and Outdoor Recreation & BLM
Type of access	Road accessible (multiple launches on different segments).

Type of allocation system	Commercial limits implemented; non-commercial limits defined (but not reached).
Year permits first limited	1995; Plan in 1998; revisions to system in 2001.
Primary type of limit	Boats per day (varies by segment).
Other limits	Group size, commercial launch periods.
Capacity basis	Historical use + planning
Permit system approach	Split
Primary distribution technique(s)	Negotiated calendar for commercial use; private use not limited yet.
Secondary distribution technique(s)	None
Common pool of unused allocation	No sector common pool on daily basis, but it has occurred during planning (see sidebar in case study chapter). Outfitters can trade use among themselves (complex rules).
Use limit season(s)	Year-round, but primary season May 15 to Sep 7
Primary distribution dates	None for non-commercial; commercial calendar negotiations in winter
Private-commercial split (goal)	Varies by segment and season. Some segments 95 to 100% private; others 50-50 in summer; and still others 25% non-commercial in summer.
Private-commercial split (actual)	Only 2 to 36 days limited for commercial (depending on segment) and no days limited for non-commercial yet.
Trip leader policy	Not applicable – non-commercial use limits not yet reached.
Participant tracking / repeat user	No
Commercial transfer policy	Allowed with minimal review.
Waiting list	No
Cancellation/no show penalties	No
Application fees	No
User fees	$2 per person (rising to $3 in 2008)
Number of commercial outfitters	55
Group size limits	10 boats per trip; 300 yards between trips.
Trip length limits	None
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Historical use based on 5 years of data (1989-1994) Limits enforced only after capacity for a segment has been exceeded for 5 days in a year. Limits apply only to days that exceeded capacity (each day is added incrementally) Limits for specific days removed if under capacity for two consecutive years. When use must be reduced to meet limits, all outfitters reduce proportionally. Complex calculations used to determine boats/year and distribution across seasons. Outfitters must use 80% of 3 year average use to maintain allocation. Commercial boat launch hours on some segments (8:30 to 11 am). Commercial boats off river by 5 pm on other (fishing) segments. “Rafts” defined as any boat capable of 3 people. Non-commercial use estimated from “Parks Pass” and photography concession counts.
Contact	Colorado State Parks Arkansas Headwaters Recreation Area 307 West Sackett Ave. Salida, CO 81201 Information from John Kreski

Chetco River, Oregon

Segment	Wild and Scenic segment
Miles	45
Typical boatable season	Year-round
Whitewater difficulty	Class I-II
Designation/classification status	National Wild & Scenic River, 1984 (wild, scenic, and recreational segments)
Managing agency	USFS
Type of access	Road accessible; multiple launches.

Type of allocation system	Commercial limits implemented; non-commercial limits defined (but not reached).
Year permits first limited	1998
Primary type of limit	Launches (if necessary)
Other limits	Non-motorized use only; group sizes.
Permit system approach	Common pool, if needed.
Primary distribution technique(s)	Undecided.
Use limit season(s)	Year-round.
Primary distribution dates	Undecided.
Application fees	None.
User fees	None.
Number of commercial outfitters	25 fishing guides
Group size limits	12 for all trips
Trip length limits	Not specified.
Human waste policy	Recommended.
Fire ring policy	Recommended.

Other capacity/allocation features	Self-administered permits at roadside kiosk.

Contact	Rogue River-Siskiyou National Forest PO Box 520 333 West 8th Street Medford, OR 97501 (541) 858-2200

Illinois River, Oregon

Segment	Wild Section from Miami Bar to Oak Flat
Miles	31
Typical boatable flow range	500 to 3,500 cfs at 31 feet per mile
Typical boatable season	March through May
Whitewater difficulty	Class III-IV-V
Designation/classification status	National Wild River, 1988
Managing agency	USFS
Type of access	Road accessible on ends

Type of allocation system	Commercial limits on number of outfitters; total launches per day limit defined (but not reached).
Year permits first limited	1998
Primary type of limit	Launches (if necessary) to meet encounter standards.
Other limits	Group size limits.
Capacity basis	Studies in mid-1980s.
Permit system approach	Common pool, if needed.
Primary distribution technique(s)	Undecided.
Use limit season(s)	Year-round.
Primary distribution dates	Undecided.
Application fees	None.
User fees	None.
Number of commercial outfitters	2 whitewater outfitters; 10 fishing guides (not wild segment).
Group size limits	12 for all trips
Trip length limits	Not specified.
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Self-administered permits at nearby store (where shuttles often originate). Forest Service apparently considered implementation of full common pool system in mid-1990 to ensure that encounter standards in the management plan were not exceeded. Some stakeholders questioned whether use or impacts had reached "trigger" levels. The system was not implemented.

Contact	Rogue River-Siskiyou National Forest PO Box 520 333 West 8th Street Medford, OR 97501 (541) 858-2200

Kern River, California (Upper and Lower)

Segment(s)	Johnsondale Bridge to Kernville (Upper) and Below Isabella Reservoir
Miles	19 (upper) and 18 (lower)
Typical boatable flow range	300 to 4,000 at Kernville
Typical boatable season	Spring through late summer
Whitewater difficulty	Class III-IV
Designation/classification status	National Wild & Scenic River (1987); recreational and scenic reaches.
Managing agency	USFS (some BLM cooperation).
Type of access	Road accessible; multiple launches.

Type of allocation system	Commercial limits implemented; non-commercial use formerly limited (but no longer).
Year permits first limited	1979 to 1988; then non-commercial limits removed.
Primary type of limit	In past: people per day and launches per day (commercial). Currently: number of outfitters only; no sector limits.
Other limits	Group sizes.
Capacity basis	Historical use.

Permit system approach	1979-1988 used a split allocation
Primary distribution technique(s)	First-come/first served at office.
Secondary distribution technique(s)	Same as primary.
Common pool of unused allocation	No.
Use limit season(s)	Year round.
Primary distribution dates	First-come/first-served during limit era; no current limit.
Private-commercial split (goal)	Currently unspecified.
Private-commercial split (actual)	~15% non-commercial vs. 85% commercial (Lower). Unspecified (Upper)
Trip leader policy	Not applicable.
Participant tracking	No
Commercial transfer policy	Allowed.
Use of overbooking	No
Waiting list	No
Cancellation penalties	No
No show penalties	No
Repeat user limitations	No
Application fees	None
User fees	None
Number of commercial outfitters	6 on Upper; 4 on Lower.
Group size limits	Varies by segments. Upper is 25 for private and commercial; Lower is 18 / 30.
Trip length limits	None. Most trips are day or one night trips.
Human waste policy	Yes, carry-out required. No scat machine.
Fire ring policy	Yes; fire pans.

Other capacity/allocation features	Non-commercial limits lifted in 1988 because private boaters had been "flooding" office in mornings (300+ boaters on some weekend days). Outfitters camp on private or leased land (have established base camps).

Contact	Kern River Ranger District-Kernville Office P.O. Box 9 Kernville, CA 93238 760-376-3781 Information from Sheryl Bowers

Lower Salmon, Idaho

Segment(s)	Hammer Creek to Snake River
Miles	63 (+ 10 on Snake to Heller Bar).
Typical boatable flow range	3,000 to 15,000 cfs.
Typical boatable season	April to October
Whitewater difficulty	Class III (one IV)
Designation/classification status	None
Managing agency	BLM
Type of access	Road accessible at start (and on Snake at take-out).

Type of allocation system	Commercial limits on number of outfitters; no non-commercial limits.
Year of first limits	Required since mid-1980s (but no limit).
Primary type of limit	None on trips per day.
Other limits	Number of outfitters; group sizes.
Capacity basis	Not applicable.
Permit system approach	Commercial only (no limits on number of tips).
Primary distribution technique(s)	Commercial only – outfitter discretion.
Secondary distribution technique(s)	Not applicable.
Common pool of unused allocation	Not applicable.
Use limit season(s)	Registration required year round.
Primary distribution dates	Not applicable.
Private-commercial split (goal)	None
Private-commercial split (actual)	Actual splits: about 25% of launches and 39% of users are commercial (2005 data).
Trip leader policy	No
Participant tracking	No
Commercial transfer policy	Allowed; minimal oversight or analysis of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	No
No show penalties	No
Repeat user limitations	No
Application fees	None
User fees	None
Number of commercial outfitters	45 total (see break down below)
Group size limits	30
Trip length limits	None
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Specifically managed as “no limit” alternative in Salmon Basin. Focus is on minimizing resource impacts rather than social impacts like encounters. 25 page boater guide. 14 powerboat permits; 31 float permits.

Contact	Cottonwood Field Office 1 Butte Drive Cottonwood, ID 83522 208-962-3245 Information from Joe O’Neill

Merced River, California

Segments	BLM segments from Indian Flat to Railroad Flat
Miles	18
Typical boatable flow range	Variable 800 to 4,000 (changes difficulty)
Typical boatable season	April through July
Whitewater difficulty	III-IV
Designation/classification status	Wild and Scenic River
Managing agency	BLM (some cooperation with USFS)
Type of access	Road accessible (multiple locations).

Type of allocation system	Commercial limits implemented; no non-commercial limits.
Year permits first limited	1979; revisions in 1984
Primary type of limit	Launches per day (8).
Other limits	Group size limits, starts per day.
Capacity basis	Historical use + planning.
Permit system approach	Commercial use only.
Primary distribution technique(s)	Negotiated calendar
Secondary distribution technique(s)	None
Common pool of unused allocation	Yes, within commercial sector.
Use limit season(s)	April through July
Primary distribution dates	None for private users.
Private-commercial split (goal)	Not applicable.
Private-commercial split (actual)	Not applicable.
Trip leader policy	Not applicable.
Participant tracking / repeat user	Not applicable.
Commercial transfer policy	Allowed after intensive review.
Use of overbooking	No
Waiting list	No
Cancellation penalties	None
No show penalties	None
Application fees	None
User fees	None
Number of commercial outfitters	7 outfitters (10 total permits); as many as 13 in past
Group size limits	25 for private (+ 6 guides for commercial).
Trip length limits	No (mostly day trips).
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Starting in 1984, outfitters "lost" starts for not using 85% of allocation. Currently 65% is the standard for reduced launches – usually less than 2 to 3 lost per year. Lost starts go to common commercial pool. Roughly 1/3 of all use is private; no limits expected in near future. But there has been a shift to higher kayaking use than rafting in private sector. Very flow-dependent river; major effect on use. Recent slide and highway blockage affected use. "Reallocation" among outfitters occurs every 3 years. Total use is about 9,000 to 10,000 people per year (in short season).

Contact	Bureau of Land Management Folsom Field Office 63 Natoma Street Folsom, CA 95630 Phone: (916) 985-4474 Information from Jim Eicher and Jeff Horn.

North Fork American River, California

Segment(s)	Chamberlain Falls Reach
Miles	5
Typical boatable flow range	400 to 2,500 cfs
Typical boatable season	December through June
Whitewater difficulty	Class IV
Designation/classification status	State Park
Managing agency	Auburn State Park
Type of access	Road access on ends

Type of allocation system	Commercial limits implemented; no non-commercial limits.
Year permits first limited	1980 (commercial only); 1988 revision; 2004 revision.
Primary type of limit	Commercial use on weekends
Other limits	Group sizes, start times, number of boats
Capacity basis	Historical use
Permit system approach	Commercial use only
Primary distribution technique(s)	Calendar
Secondary distribution technique(s)	Reservation by phone from pool.
Use limit season(s)	Winter and spring
Primary distribution dates	Entire season (varies depending upon flows and weather)
Commercial transfer policy	Allowed after review; rules adjust allocation based on use.
Use of overbooking	Not applicable.
Can allocations be reduced?	Not applicable.
Number of commercial guides	18
Group size limits	24
Trip length limits	Not applicable (mostly day trips).

Other capacity/allocation features	Number of outfitters grew from 9 to 18 from 1980 to present. Elaborate system of choosing calendar dates – annual meeting with 3 rounds of choices. Start times are scheduled (chosen during annual "Draw Meeting"). Complexities of allocation between outfitters discussed in RMS newsletter, spring 2003.

Contact	Auburn State Recreation Area El Dorado Street at Old Foresthill Road Auburn , CA, 95602 530-823-4162 Information from Bill Deitchman

South Fork American, California

Segments	Chili Bar (7 miles), Coloma (3 miles), and the Gorge (9 miles)
Miles	19
Typical boatable flow range	800 to 3,500 cfs
Typical boatable season	March through October
Whitewater difficulty	Class III+
Designation/classification status	County management
Managing agency	Eldorado County lead. Some BLM land.
Type of access	Road accessible

Type of allocation system	Commercial limits implemented; non-commercial limits defined but not reached.
Year permits first limited	1981 commercial use regulation; 1988 revisions; 2004 revisions.
Primary type of limit	People per day (2,100 on Chili Bar; 3,200 in the Gorge)
Other limits	Density per 2 hour period (<300); group size limits, number of outfitters
Capacity basis	Study + planning
Permit system approach	Split allocation (if capacities reached).
Primary distribution technique(s)	Per day allocations on weekends/weekdays for individual outfitters; none for private
Secondary distribution technique(s)	Not relevant at this time
Common pool of unused allocation	No, but there is a "flex" system for smaller outfitters.
Use limit season(s)	Year-round
Primary distribution dates	None for private users.
Private-commercial split (goal)	No goal specified.
Private-commercial split (actual)	Roughly 70% commercial in recent years (down from 75% in mid 1990s.
Trip leader policy	No private permits.
Participant tracking / repeat user	No private permits.
Commercial transfer policy	Allows transfers and encourages consolidation among existing outfitters, but requires review of sales and allocation is not allowed on the bill of sale.
Use of overbooking	Not applicable.
Waiting list	Not applicable.
Cancellation penalties	Not applicable.
No show penalties	Not applicable.
Application fees	Not applicable.
User fees	$2 for commercial passengers.
Number of commercial outfitters	42
Group size limits	56 people (including guides); maximum of 7 rafts or 12 kayaks.
Trip length limits	None
Human waste policy	Yes
Fire ring policy	Yes

Other capacity/allocation features	Phased actions to reduce then limit use if standards exceeded include: Increase commercial passenger fees Decrease commercial and institutional allocations Limit all use (all user permit system) Variable allocations to outfitters (with more on weekends). Existing use has not approached capacity thresholds in recent years. Use levels overall are down 20 to 45% from mid-1990's peaks. Current use is about 100,000 user days per year.

Contact	Eldorado County Airports, Parks & Grounds Office 3000 Fairlane Court, Ste 1 Placerville, CA 95667 (530) 621-5864

Susitna-Basin Recreation Rivers, Alaska

Segment(s)	6 rivers: Talkeetna, Talachulitna, Lake Creek, Deshka, Alexander Creek, and Little Susitna
Miles	362 total
Typical boatable flow range	Varies by river.
Typical boatable season	Floating and jetboating from Mid May through mid-October.
Whitewater difficulty	Class III-IV
Designation/classification status	State Recreational Rivers, 1989.
Managing agency	Alaska DNR
Type of access	Mostly fly-in access to headwaters (some road access on two rivers). Mostly-boat-out or road access at river mouths (confluences with the Susitna River).

Type of allocation system	Potential limits on commercial and non-commercial users.
Year permits first limited	Proposed in future (if standards exceeded).
Primary type of limit	Launches per day.
Other limits	Commercial camp locations, camp occupancy limits, PWC ban, some non-motorized use zones/periods (voluntary).
Capacity basis	Planning based on survey data and public input (circa 1989-90).
Permit system approach	Allocation goals suggest common pool or adjusting split.
Permit mechanisms	Unspecified; to be decided.
Number of commercial outfitters	Approximately 100 (for 6 rivers) in 1991.
Group size limits	None.
Trip length limits	14 day campsite occupancy.
Human waste policy	Recommended.
Fire ring policy	None.

Other capacity/allocation features	Management plan in 1991. Commercial outfitters are registered (and pay fees) but are not limited. Plan establishes allocation goals without specifying system characteristics (if needed). Proactive plan with actions linked to standards. Most plan actions not implemented in 16 years (budget constraints/ lack of field staff).

Contact	Alaska Department of Natural Resources Division of Mining, Land, and Water 550 W. 7th Suite 150 Anchorage AK 99501 907.269.8536 Information from Bruce Talbot

Verde River, Arizona

Segment(s)	Wild (35 miles) and Scenic (18 miles) segments
Miles	52
Typical boatable flow range	400 to 3,000 cfs.
Typical boatable season	Limited high flow days in March and April
Whitewater difficulty	Class III (one IV-V)
Designation/classification status	National Wild & Scenic River, 1984. Wilderness. Three National Forests.
Managing agency	USFS
Type of access	Road accessible at several locations.
Type of allocation system	Commercial limits only.
Year of first limits	Mid-1980s (designation in 1984).
Primary type of limit	People per day (60 on wild, 250 on scenic) and user-days per year.
Other limits	Number of outfitters; group sizes.
Capacity basis	Historical use + planning
Permit system approach	Commercial only – annual user day allocation + common commercial pool.
Primary distribution technique(s)	Commercial only – outfitter discretion.
Secondary distribution technique(s)	Not applicable.
Common pool of unused allocation	20% of annual user days in common commercial pool (both segments).
Use limit season(s)	Boating season is flow dependent; usually March and April.
Primary distribution dates	Not applicable – outfitter discretion on trip starts.
Private-commercial split (goal)	Not applicable.
Private-commercial split (actual)	Estimated: 33% commercial and 66% private on wild segment.
Trip leader policy	Not applicable.
Participant tracking	No
Commercial transfer policy	Allowed; minimal oversight or analysis of sales.
Use of overbooking	No
Waiting list	No
Cancellation penalties	Not applicable.
No show penalties	Permit holder not allowed to apply for three years
Repeat user limitations	Not applicable.
Application fees	Not applicable.
User fees	Not applicable.
Number of commercial outfitters	2
Group size limits	12 + 3 guides = 15 total in wild segment; 25 total in scenic segment.
Trip length limits	14 days in wilderness; typical trips 2 to 5 days in wild, 1 to 2 in scenic.
Human waste policy	Yes, carry-out required. No scat machine.
Fire ring policy	Yes; fire pans and ash carry-out required.

Other capacity/allocation features	25 page boater guide. No camping /stopping zone for bald eagle nesting. 100+ camps in river, but bottlenecks at "destination camps" – no designated camps. Each outfitter gets equal allocation of users days (200 on wild, 400 in scenic). Outfitters share a common pool (100 on wild, 200 on scenic). Recommended self-registration for privates; estimated compliance = 20%. Note: Recreation is not an outstandingly remarkable value.

Contact	Verde Ranger District (USFS) P. O. Box 670 (300 E. Highway 260) Camp Verde, AZ 86322-0670 (928) 567-4121 Information form Dexter Allen & Bill Cook.

Other examples of partial and potential allocation systems

River	State	Miles	No. of outfitters	Other comments
Allagash	ME	92	20	Partial: commercial only. National WSR managed cooperatively with state and local entities. Major controversies over development (road access and bridges). Commercial outfitters must have permits (no limits on launches). No non-commercial permits.
Beaverhead	MT	75	87	Partial: commercial only. Commercial use is primarily fishing guides. Managed by State of Montana Fish, Wildlife, & Parks Limit on number of outfitters and number of client days during peak period. Motorized use restrictions. Non-commercial use not limited.
Big Hole River	MT	153	116	Partial: commercial only. Multiple segments (Clark Canyon Reservoir to Big Hole River). Blue Ribbon trout fishery. Managed by State of Montana Fish, Wildlife, & Parks Limit on number of outfitters and number of client days during peak period. Motorized restrictions (none over 10 horsepower)
Black Canyon of Gunnison (National Park Service)	CO	16	0	Potential: non-commercial use might be limited if resource damage. Kayak only run (Class V with portages). No commercial use. Wilderness permit currently required (no fee or limit).
Blackfoot	MT	139	50	Potential future limits on commercial and non-commercial use. Boatable from 600 to 8,000 cfs. Some angler-boater conflict; tuber-angler conflict in summer. 93% of use is non-commercial. Considerable use is organizational (boy scouts, church groups). Group size limits vary from reach to reach. No existing limits on number of guides or trips for either sector. Over 400 tubers/hour in summer peaks. Information from Chris Lorentz, MT FWP.
Blackfoot	ID	8	2	Partial: commercial only. Commercial limits via Idaho Outfitter and Guide regulations (number of outfitters). Float use only.
Bruneau / Jarbidge	ID	69	1	Partial (number of commercial outfitters) and potential (non-commercial) if needed. Challenging Class III-IV river. BLM-managed. April-June season; highly flow-dependent (800 to 2,500 cfs). Requires permit (can register on site or by mail). Human waste and fire pan regulations. Commercial limits only via Idaho Outfitter and Guide regulations allow as many as 4 outfitters (no trip limits).
Boise River (South Fork)	ID	21	2	Partial: commercial limits only. Commercial limits via Idaho Outfitter and Guide regulations. Float use only. Only one boat per outfitter at one time.
Boise River	ID	10	2	Partial: commercial limits only. Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. No more than 4 boats per outfitter at one time.

River	State	Miles	No. of outfitters	Other comments
Buffalo National River	AR	135	13	Partial: commercial limits only. No use limits except number of outfitters. NPS management: National River status (designated 1972). Some motorized use.
Carson River (East Fork)	NV	19	2	Potential commercial limits. USFS managed. Potential WSR study river. Class II-III. No current limits for commercial or non-commercial sector. Commercial outfitters operate under special use permits (not limited at this time).
Cheat River	WV	11	13	Partial: commercial limits only. No limits on non-commercial boaters. WVa manages total number of commercial guides through a state license program. It establishes per day allocations on 5 rivers using complex formulas that consider the maximum capacity of the river (through an LAC process), the existing allocation (from historical use or adjustments), and market share (the amount they are actually using). The current system puts 90% of weight for next year on its existing allocation (10% on what it used). No per day commercial limits on Cheat (use is low at 8,000 user days per year compared to New, Gauley, or Shenandoah).
Cherry Creek (Tuolumne)	CA	9	2	Partial: commercial limits only. Continuous Class IV-V day run. Dam release flows; optimal is 700 to 1,500 cfs. Both outfitters allowed up to 2 launches per day and up to 7 per week (e.g., every day per week or double on a few days). Group size is 26. No limit for non-commercial use defined.
Clark's Fork (Alberton Gorge)	MT	11	29	Partial: commercial limits only. Class III+ river managed by Montana Fish, Wildlife, & Parks Limit on number of outfitters, but no limit on number of trips. Motorized restrictions (none over 10 horsepower)
Clearwater (Several segments)	ID	60+	20	Partial: commercial limits only. Commercial limits only via Idaho Outfitter and Guide regulations. Up to 10 powerboat outfitters and 5 to 10 float outfitters depending on the segment allowed. No more than 3 to 5 boats per outfitter at one time (depending on segment).
Clearwater (North Fork)	ID	29	4	Partial: commercial limits only. Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. No per boats per outfitter limits.
Coeur d'Alene	ID	29	1	Partial: commercial limits only. Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. Only two boats per outfitter at one time.
Colorado River (Ruby Canyon)	CO	25	3	Potential commercial limits in future. Class I-II river segments. No non-commercial limits defined or expected.
Colorado River (Moab Daily)	UT	17	22	Partial: commercial limits only. Non-commercial permits required -- but not limited and no fees. Call for permit (mornings only); must be carried on river. Permit must be left at take-out (helps estimate use). Commercial use is not limited (except number of outfitters).

River	State	Miles	No. of outfitters	Other comments
Dead River	ME	16	14	Partial: commercial limits only. Scheduled flow releases. Day use river. State of Maine controls outfitter numbers. Capacity is 1,000 commercial passengers per weekend day. No non-commercial limits.
Delaware River	NY/ PA	73	11	Potential limits only. National Scenic and Recreational River managed by NPS. Nearly all private land. Multiple road access locations. Class I-II rapids. No non-commercial permits. Commercial operations include canoe liveries and outfitters (which are not limited). Canoe use may produce over 300,000 visits per year, but management plan does not establish future use limits.
Delta River / Tangle Lakes	AK	25	1	Potential limits on both commercial and non-commercial use. National WSR managed by BLM. Some powerboat use on lakes; jet boat use on lower 10 miles; float craft only on "through trips" (includes a Class IV gorge that can be portaged). Forthcoming 2008 plan is developing standards that may trigger limits in future (different segments with different limits). Likely limit: launches per day linked to campsite competition standards. Likely split system, but current commercial use is rare (occasional national Boy Scout groups). Potential group size limits at 12 per trip.
Dolores River (Slickrock/Bedrock)	CO	97	16	Partial: commercial limits only. Class II-IV segments. Short flow-dependent season. Commercial limits on number of outfitters, not number of trips. Group size limits 25 (Slickrock) and 16 (Bedrock)
Dolores River (Gateway Segment)	CO/UT	32	14	Partial (commercial) and potential (non-commercial). Commercial limits on number of outfitters, not number of trips. Non-commercial permits required – but not limited and no fees. Call for permit (mornings only); must be carried on river. Permit must be left at take-out (helps estimate use).
Flathead (Middle Fork)	MT	73	4	Partial (commercial) and potential (non-commercial). USFS managed WSR, 1976. Potential interest in a common pool system if limits are necessary (from Western Wildlands article; no specific commitment from USFS in existing plan). Has fly-in multi-day and road accessible day use segments. Existing commercial outfitters have limits on "boating-days" in entire basis that may complicate common pool options. Non-commercial use is less frequent than commercial use (fly-in logistics appear to constrain use).
Gallatin	MT	30	5	Partial: commercial use only. Day use segments on USFS land northwest of Yellowstone Park. Commercial use limits on number of outfitters, not number of trips.

River	State	Miles	No. of outfitters	Other comments
Gauley	WV	27	25	Partial: commercial use only. Flow release river – occurs on 22 days in Sept and Oct. WVa manages total number of commercial guides through a state license program. It establishes per day allocations on 5 rivers using complex formulas that consider the maximum capacity of the river (through an LAC process), the existing allocation (from historical use or adjustments), and market share (what amount they are actually using). The current system puts 90% of weight for next year on its existing allocation (10% on what it used). Per day commercial limits on each segment is 3,040 per day; has not been exceeded. Annual Upper Gauley use: 20,00 to 25,000 user days. Annual Lower Gauley use: 35,000 to 40,000 user days. Some crowding and conflict on high use weekends. Increases in capacity were made on several occasions without public input.
Grand Ronde / Wallowa	OR	91	8	Potential commercial and non-commercial limits in future. Includes 10 miles on the Wallowa. All users required to get free permit (available at launches). No limits on private use. Commercial use requires Special Use Permit (no limits on number of outfitters or number of trips). Umatilla NF and Vale BLM district. Fire pan and carry out waste regulations.
Green River (Labyrinth Canyon)	UT	68	25	Partial (commercial) and potential (non-commercial). Limits on number of commercial outfitters, but not on trips. Permits required but not limited for non-commercial trips. Group size limits of 25. Some motorized use occurs (jet boats).
Green River (Flaming Gorge)	WY	32	10	Partial: commercial limits only. Limits on number of outfitters. Previously: Limit commercial launches per day. Currently: Limit commercial launches per month. Reallocate based on previous use every three years. USFS-managed. Daily use fee: $2 (season passes available). Information from Nanette Gale
Gulkana River	AK	127	17	Partial (commercial) and potential (non-commercial). National WSR managed by BLM. 42 miles on commonly boated Main Stem. 2006 plan standards may trigger limits in future. Limit: launches per day linked to campsites. Split system would be implemented. Commercial use is <10% of existing use. Jet boat use on West Fork and lower 10 miles.
Gunnison Gorge	CO	14	11	Partial: commercial limits only. BLM managed. Commercial limits on number of outfitters, not number of trips. Class II-III. Considerable boat-based fishing. 1 to 3 day trips.
Hudson River (Gorge)	NY	16	12	Partial (commercial) and potential (non-commercial). State Department of Environmental Conservation management. Designated primitive area with a “Unit Plan.” Outfitter association (12 members) pays about $60,000 per year for short scheduled releases (800 cfs). Up to 150 rafts and 1,200 people may run river on high use days (weekends). Non-commercial boaters welcome to use water (but must register for time slot).

River	State	Miles	No. of outfitters	Other comments
John Day River	OR	201	33	Partial (commercial) and potential (non-commercial). National Wild & Scenic River, 1988. (Wild, Scenic and Recreational reaches). BLM (some USFS on North Fork) Permits required year round (but not limited). LAC standards indicate that non-commercial limits may be needed. Final limits and allocation approach undecided; may follow Deschutes reservation example. Plan goal: reduce outfitters to 26 through attrition/consolidation. Group size limits: 16 Limits tied to campsite availability, encounters, and biophysical triggers (not reached yet, but approaching triggers). Commercial use is about 15% of total use.
Kaweah River	CA	9	4	Partial: commercial limits only. No current limits on number of trips for any sector. Group size limits appear to be 75 people (county enforced). May be limit on number of outfitters. Outside Kings Canyon / Sequioa NP. Class IV river; mostly private land.
Kootenai	ID	47	10	Partial: commercial limits only via Idaho Outfitter and Guide regulations. Float and motorized use (5 outfitters each).
Kenai (Upper)	AK	11	29	Partial: commercial limits only. USFWS managed segment from Russian River to Skilak Lake. Limits on number of guides/outfitters. 20 fishing guides and 9 scenic outfitters. Fishing guides have additional limits – 10 trips per week, 4 trips per day. Only four outfitters allowed to be "high volume." Outfitters chosen by bid prospectus (merits of service and offerings, not cost). New plan due in 2008, may reduce starts/number of outfitters slightly.
Kenai (state-managed use)	AK	86	380	Potential commercial limits. Managed cooperatively by AK State Parks with assistance from a stakeholder board. USFS and USFWS also manage use on the Upper and Middle Kenai. Total guide limits is considered a state issue; was major topic in 2002-2004 but did not result in limits. May be addressed in 2008-09 study. Guides rather than outfitters are managed; also distinctions are made between powerboat and drift fishing guides, as well as scenic tours. Mid-2000s numbers: 350 fishing guides (about 300 motorized), 35 scenic guides.
Kennebec	ME	9	15	Partial: commercial limits only. Scheduled flow releases on a day use river. Access fees to local land owner. State of Maine controls outfitter numbers. Capacity is 1,000 commercial passengers per weekend day. No non-commercial limits.
Klamath River (Middle)	CA	148	42	Partial: commercial limits only (number of outfitters only). WSR managed by USFS. Class II-IV whitewater. Multiple road-accessible segments. Has human waste and fire pan regulations. Relatively low use except 34 miles below Happy Camp. No non-commercial use permits (but registration encouraged). Group size limits at 30.

River	State	Miles	No. of outfitters	Other comments
Klamath River (Upper)	OR/CA	16	12	Partial: commercial limits only. Scheduled flow releases daily in summer (likely to change with new FERC license; possibly just 1 to 2 days per week after June). Some overnight use. WSR managed by BLM. <10% private use; no non-commercial permits required. Outfitters are under special use permits (not limited). Primarily day use (some overnight use when flows are scheduled).
Kilickitat	WA	11	5	Partial: com limits only. Class II-III, with good fishing. Non-commercial registration requested, but not limited. Commercial use moratorium in 2007. No limits on number of commercial trips. Special use permits are renewed for 5 year periods. Commercial use required to develop operating plan. One angling outfitter, 2 raft-only outfitters, 2 kayak teaching outfitters, and 2 raft + kayaking outfitters. Two segments of river; not all commercial uses overlap. Low use levels – 350 people per year for fishing, 200 to 250 people per year for rafting and kayak courses.
Lochsa River	ID	26	5	Partial: Commercial limits only. Commercial limits only via Idaho Outfitter and Guide regulations. Limits only the number of outfitters (not number of trips). Float use only. Also USFS-managed: Wild and Scenic River (1968). Some designated outfitter picnic sites. Short whitewater season (April through July).
Madison River (Bear Trap Canyon)	MT	9	2	Partial: commercial limits only. 1,100 to 3,500 cfs is typical boatable range (has been run as high as 7,000 cfs). 1 to 2 camps available, but no overnight boat-based camping allowed. Two commercial whitewater outfitters; each are allotted 40 launches per year. Use levels: about 4,500 people per year. Used for whitewater and float-based fishing. Info from Susan James, BLM.
Madison River (Other segments)	MT	140	159	Potential: Commercial limits only in future. Multiple segments (from Yelllowstone to the Missouri) Multiple agencies: NPS, USFS, BLM, Mt. Fish, Wildlife, & Parks Commercial permits required in past; new 2008 coop agreement between BLM and state. Number of permits will not be limited through this plan cycle.
McKenzie River (Upper)	OR		37	Potential commercial limits. USFS. No non-commercial permits. Commercial permits required but not limited (numbers or trips). Currently 7 raft-only, 17 fishing-only, and 13 rafting/fishing outfitters.
Metolius River	OR	26	0	Partial: commercial limits only (prohibited). Class II-III and high quality fishing opportunities. 1988 WSR addition; 1997 River Management Plan. Registration required for non-commercial users; no limit. No commercial use allowed. Lead agency: USFS.

River	State	Miles	No. of outfitters	Other comments
Merced River (Yosemite NP)	CA	3	1	Partial: Commercial limits only. NPS allows a concessionaire to rent rafts and inflatable kayaks for a 3-mile reach from Stoneman Bridge to Sentinel Beach. No private use limits (but that use is not encouraged). Restrictions against use at high water (can't fit under bridges) or when air+water temperature is below 100.
Missouri River (Upper – Missouri Breaks)	MT	149	23	Partial: Commercial limits only. NWSR (1976). BLM-managed. Number of outfitters is limited; but no limits on number of trip/use. No fees/permits for non-commercial use unless group size > 50. Recommended non-commercial registration. Indicators and standards in plan; no triggers for use limit actions.
Nantahala (Day use segment)	NC	9	15	Partial: Commercial limits only. USFS-managed. Class II-III day use river. High use river with over 200,000 user days per year. 1984 limits on number of commercial outfitters and number of commercial trips per day. No non-commercial use limits. $1 per person per day user fee.
Nenana River (Denali NP segment)	AK	22	5	Potential commercial limits. Borders Denali National Park. Class II-IV segments; some overnight but mostly day use. High commercial use on two segments near park entrance (several daily trips). No commercial or private limits. Limited state management, but identified as potential state recreation river in early 1990s. Jetboat tours on upstream segment (Class I-II); no limits on number of trips or people (but DNR used to manage their upland use till they moved site to Native land).
Niobrara River (Ft Niobrara NWR reach)	NE	6	13	Partial: Commercial limits only. Entire National Scenic River is 76 miles. Commonly used reach is 30 miles (Cornell to Norden). Commercial use is mostly unguided (they just rent boats and provide shuttles). 2004 Refuge River Management Plan defines rental use limits: 400 people per day on weekdays and Sundays; 800 per day on Saturdays. No limit on number of outfitters or number of trips. Explicit statement that there will be no preference for rented vs. private use (but currently at least 90% rented). Special use permits for rental outfitters can't be sold but can be transferred (unclear why this matters given no limits on outfitters). Structure for bid process for launches if necessary (has not been needed yet).
New River	VA	56	4	Potential commercial limits. Mix of fishing and touring outfitters; also tubing and canoe liveries. No state oversight on the number of guides or outfitters (aside from qualifications and business license).

River	State	Miles	No. of outfitters	Other comments
New River	WV	53	24	Partial: Commercial limits only. NPS unit, but limits are part of state program. Typical season is from April through Oct. WVa manages total number of commercial guides through a state license program. It establishes per day allocations on 5 rivers using complex formulas that consider the maximum capacity of the river (through an LAC process), the existing allocation (from historical use or adjustments), and market share (what amount they are actually using). The current system puts 90% of weight for next year on its existing allocation (10% on what it used). Per day commercial limits on Lower New: 3,875; this has never been exceeded. Annual New commercial use: 25,000 on Upper New and 135,000 on Lower New. Only 2 of 20 outfitters on New even reached 90% of their allocations. Some crowding and conflict at access points, but on-river problems are few. Preparing draft plan in 2007. Information from Katie Miller, NPS.
Ocoee (Upper and Middle Segments)	TN	10	22	Partial: Commercial use limits only (number of outfitters and number of trips). Upper segment (Olympic course) has weekend flows in summer (34 days per year). Middle segment has flows 5 days per week in summer (Tues and Wed off); weekend flows from March through Novebmer). 250,000 users annually (mostly commercial passengers). Cherokee National Forest: (423) 476-9700
Owyhee	ID	36	6	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. Also BLM managed river; WSR (1984). Non-commercial permits required (not limited).
Pack Creek	AK	1	7	Full: All users limited. USFS and ADF&G bear viewing area on Admiralty Island. Land-based use. Permit required June 1 to Sep 10. Advanced reservations taken from July 5 to Aug 25. Fees: 25 for child/senior and $50 for adults in peak. Refunds if cancellations are 4 days before. One time change in dates allowed. No refunds for weather delays (fly or boat-in access only). Overnight use on adjacent island for boat-based users; otherwise day use only.
Payette (Main)	ID	7	5	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. Only one boat per outfitter at one time.
Payette (North Fork)	ID	14	4	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Two segments: Carbarton and Warren Wagon. Class II-III segments. Float use only. No more than 4 rafts by two trips per day per outfitter.
Payette (South Fork)	ID	54	5	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. Only one boat per outfitter at one time.

River	State	Miles	No. of outfitters	Other comments
Rio Grande (Big Bend National Park)	TX	180	3	Partial (commercial) and potential (non-commercial). Several trip options: Santa Elena Canyon 20 to 26 miles (Class II-III with one IV) Mariscol Canyon: 10 miles (Class II-III) Boquillas Canyon: 34 miles (Class I-II) Lower river: 83 to 137 mile options (Class II-V) Colorado Canyon (outside park) requires State Park permit (also not limited). Group size limits 20 to 30 (depends on segment). $10 permit fee. 3 launches per day (never reached so far). Undecided on allocation approaches if needed. Information from Bernadette Devine, NPS.
Sauk	WA	51	5	Partial: Commercial limits only. USFS managed. Limits on number of outfitters and number of service days.
Salmon (Riggins segments)	ID	59	36	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. 10 powerboat permits + 26 rafting permits. BLM managed. Riggins to Lower Salmon put-in.
Salmon (Recreation section)	ID	40	16	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. 5 powerboat and 11 float permits. USFS managed. Vinegar Creek to Riggins. WSR since 1980.
Salmon (Challis reaches)	ID	50+	5	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Only one boat per outfitter at one time.
Salmon (Upper near Stanley)	ID	13	5	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Float use only. Sunbeam Dam reach. No more than 3 boats fishing , 5 boats total at one time per outfitter.
Situk River	AK	11	9	Partial: Commercial limits only. USFS managed (with state and city of Yakutat cooperation). World class steelhead and salmon fishery. Small stream: 200 to 1,000 cfs flow range. Private use not limited – but rental boats and shuttles by outfitters are part of commercial allocation. Outfitters are allocated a set amount of “boat-days” per year – limits are loosely tied to Forest-wide social standards. They can be spent on guided or rental trips. River is only accessible by non-locals by plane, so this has a substantial effect on private boating use (guided use is more lucrative). Privates that rent boats and figure out their own shuttle are not part of commercial allocation system. Two motorized guided outfitters (rest are drift boats). 2003 study of impacts suggests river is near capacity. 2008 “Partners” may review planning options.

River	State	Miles	No. of outfitters	Other comments
Sixmile Creek	AK	20	4	Partial: Commercial limits only. Class III-V segments. High commercial use in summer. USFS managed. Commercial use limited to annual user-days (5,000 total). Outfitters are requesting more. Forest has a 60-40 (private to commercial) goal on its rivers, but not specific to Sixmile. Capacity study urges limiting boats per day rather than user-days per season. Uses USFS priority/temporary system for distributing user days within companies.
Skagit	WA	58	16	Partial: Commercial limits only. USFS managed WSR 1978. 12 rafting outfitters and 4 angling guides. Limits on number of outfitters and number of trips. Additional restrictions during eagle concentration season. No non-commercial limits.
Shenadoah	WV	7	5	Potential. No permits for non-commercial limits. Outfitters are licensed but not limited. No capacities identified at present (but monitoring occurs). 2nd lowest use of commercial rivers in West Virginia.
Snake River (Grand Teton NP)	WY	31	15	NPS segments in Grand Teton NP. Capacity: 105 scenic and 48 fishing boats (rarely reached). Informal launch scheduling. 1974 freeze on number of outfitters. No limits on private permits (but they are required). Allows very large scenic rafts (12 adults). No overnight use.
Snake River (BLM segment)	WY	51	19	Potential commercial limits. 11 rafting outfitters (scenic) 8 fishing outfitters/guides. BLM managed. No non-commercial limits.
Snake River (Alpine Canyon)	WY	8	30+	Partial: Commercial limits only. USFS-managed segment. Outfitter use limited by numbers of trips: 32 on river at one time. Usually 4 to 5 boats per trip x 5 trips per day. Summer use can range between 4,000 and 7,000 people per day. Developed in 1960-70s. The bottlenecks are take-outs and at major rapids. No private use limits. Privates need permit if group size is over 15. Many organizational (church and boy scout groups) trips (behave like outfitters but use private gear).
Snake River (Henry's Fork)	ID	30	13	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. 6 to 8 outfitters allowed on different reaches. Float use only. Complicated limits that keep <3 boats per outfitter on certain sub-reaches at one time. Up to 5 powerboat outfitter/guides on lower reach.
Suiattle River	WA	27	6	Partial: Commercial limits only. USFS managed WSR. Number of commercial outfitters and number of service days are limited.
Teton River	ID	15	5	Partial: Commercial limits only via Idaho Outfitter and Guide regulations. Float use only.

River	State	Miles	No. of outfitters	Other comments
Tygart River	WV	11	5	Potential. No permits for private users. Outfitters are licensed but not limited. No capacities identified at present (but monitoring occurs). Lowest use of commercial rives in West Virginia.
Tallulah Gorge	GA	2.5	0	Previously limited. Class IV-V whitewater reach in GA State Park. Opportunity created during relicensing (restored flows). Boatable from 450 to 1,200 cfs. Typical releases are 500 and 700 cfs. Permits required at first; 120 boaters per day. Also permitted 120 climbers and hikers per day. Permit free since 2001 (they weren't seeing high use). Typical use levels: 75 to 100 per day. Prohibits commercial use. Has qualified craft regulations. Waivers required. No fees except for parking. Information from Danny Tatum.
Twenty-Mile	AK		4	Partial: Commercial use limited. USFS management. Outfitters use jetboats (fishing and sightseeing). Private use is mostly pack rafts (emerging use). 1,200 user-days allotted among outfitters based on historical use. 2007 review of permit allocation being considered. USFS management (Chugach NF).
Upper Colorado River (Kremmling to Glenwood)	CO	77	76	Partial: Commercial limits only. Class I-II river segments. No non-commercial use limits. 41 rafting outfitters.
Wenatchee	WA	19	14	Potential. USFS administered. No non-commercial use limits. Number of commercial outfitters may be limited (but trips are not). Considerable private land on lower river.
West Branch Penobscot	ME	12	14	Partial: Commercial use only. Scheduled flow releases. Day use river. State of Maine controls outfitter numbers. Capacity is 560 commercial passengers per weekend day Permits required Jul-Aug. No non-commercial limits.
White Salmon	WA	5	10	Partial: Commercial limits only. Class II-IV (one V). Commercial use limited to 10 outfitters; no trip limits. Capacity bottleneck at Husom Falls. No group size limits; some groups have approached 100. 1988 WSR designation; 1991 River Management Plan. Plan indicates preference for a common pool; outfitters oppose. 1993 social impacts study (use has doubled since study). Likely plan update in 2009-2010; over standard on weekends? Recent year use levels: 15,000 to 20,000 commercial passengers 3,000 to 4,000 private boaters. 15 to 20% of use is private (mostly kayakers).
Wind River	WA	11	3	Partial: Commercial limits only. Near Columbia River Gorge. Class IV-V. Spring flows only (through June). Commercial use is managed; special use permits required; but no apparent limit on trips.

River	State	Miles	No. of outfitters	Other comments
Wilson Creek	NC	20	2	Potential. No private or commercial limits at present time. Has LAC standards for several indicators. 100 or more paddlers on high use days; typical range is 40 to 50 on boatable flow days.
Yellowstone (Yankee Jim Canyon)	MT	8	5	Partial: Commercial limits only. Class II-IV day use river. No non-commercial use limits. No commercial limits except on number of outfitters using specific access points.

List of Sources

The following lists interview sources for information about individual allocation systems or stakeholder positions on allocation issues. We thank them for their information and insight about these systems, but we take responsibility for any errors or mischaracterizations.

First	Last	Affiliation	River(s)
Tom	Elliott	Parks Canada – Kluane	Alsek / Tatshenshini
Jim	Capra	NPS – Glacier Bay	Alsek / Tatshenshini
Jennifer	Reed	USFWS – ANWR	ANWR rivers
John	Kreski	Co State Parks	Arkansas, CO
Mike	Harvey	Arkansas river trust	Arkansas, CO
Chris	Lorentz	MT Fish, Wildlife, and Parks	Blackfoot
Chris	Horman	USFS – BWCAW	Boundary Waters
Ann	Schwaller	USFS – BWCAW	Boundary Waters
Lon	Kelly	BLM – Fairbanks	BLM northern AK rivers: Birch, Beaver, 40Mile
Joe	Robles	USFS – Sumter / Pickett	Chattooga
Glenda	Woodcock	USFS – Mt Hood	Clackamas
Jim	Blazic	NPS – Canyonlands	Colorado – Cataract
Paul	Cowan	NPS – Canyonlands (retired)	Colorado – Cataract
Steve	Sullivan	NPS – Grand Canyon	Colorado – Grand Canyon
Rick	Ryan	BLM – Dolores	Dolores
Jeff	Durniak	GA Fish and Game	Dukes Creek
Chris	Ryan	USFS – Northern Region (Missoula)	Flathead
Sheryl	Bowers	USFS – Kernville	Forks of the Kern, Upper and Lower Kern
Mark	Grisham	Grand Canyon River Outfitters Asso.	Grand Canyon
Lynn	Hamilton	Grand Canyon River Guides:	Grand Canyon
Jeff	Bloom	BLM	Grand Ronde / Wallowa
Nanette	Gale	USFS – Flaming Gorge	Green below Flaming Gorge
Dennis	Willis	BLM – Price	Green in Desolation / Gray
Heath	Emmons	BLM – Glennallen	Gulkana, Delta
Heidi	Mottl	BLM – Prineville	John Day
Rob	Campellone	USFWS – AK regional office	Kenai
Chris	Degernes	AK State Parks	Kenai
Tom	Mottl	BLM – Prineville	Lower Deschutes
Lynette	Ripley	BLM – Prineville	Lower Deschutes
Craig	Trulock	USFS -- Lowell	Lochsa, Clearwater, Lower Selway
Susan	James	BLM – Dillon	Madison (Bear Trap)
Dan	Ransom	The Nature Conservancy	McCloud
Alan	Bright	CSU researcher	McNeil River
Larry	Aumiller	ADFG (retired)	McNeil River
Jim	Eicher	BLM	Merced
Jeff	Horn	BLM	Merced
Bill	Deitchman	CA State Parks – Auburn	MF and NF American
Sherri	Hughes	USFS North Fork, ID	MF Salmon, Main Salmon (Wild)
Katie	Stevens	BLM – Moab	Moab (daily), Dolores (gateway).
Charlie	Sperry	Montana Fish, Wildlife & Parks	Multiple MT rivers (including Madison)
Randy	Welsh	USFS – Intermountain Region	Multiple rivers; 4 rivers lottery
Cliff	Bobinski	NPS – New River Gorge	New River, WV
Katie	Miller	NPS – New River Gorge	New River, WV
Kris	Dey	CA State Parks – Auburn SP	NF and MF American
Stuart	Schneider	NPS – Niobrara National Scenic River	Niobrara
Mark	Sundin	BLM – Taos	Rio Chama, Rio Grande
Chris	Dent	BLM – Grants Pass	Rogue
Joe	O'Neill	BLM - Cottonwood	Main Salmon (Vinegar to Snake)
Don	Sullivan	USFS – Globe, AZ	Salt
Brad	Colin	BLM – Monticello	San Juan

Kay	Wilson	BLM -- Monticello	San Juan
Linda	King	USFS – West Fork RD, Darby, MT	Selway
Bill	Dyke	USFS – Chugach (now Idaho Power)	Sixmile
Greta	Movassaghi	USFS – Mt Baker	Skagit, Sauk, Suiattle
Colin	Maas	Montana Fish, Wildlife & Parks	Smith
Roger	Semler	MT Fish, Wildlife, and Parks	Smith, several Arctic NWR rivers
Scott	Springer	USFS Hells Canyon NRA	Snake in Hells Canyon
Marty	Meyer	USFS Hells Canyon NRA	Snake in Hells Canyon
Marty	Myer	NPS – Grand Teton	Snake in Grand Teton
David	Cernicek	USFS – Bridger-Teton	Snake near Jackson Hole
Bruce	Talbot	AK DNR – Anchorage (retired)	Susitna Basin Recreation Rivers
David	Griffen	AK DNR	Susitna Basin Recreation Rivers
Danny	Tatum	GA State Parks	Tahlulah
Julie	Detman	USFS	Tuolumne, Cherry Creek
Bunny	Sterin	BLM – Kremmling CO	Upper Colorado, Ruby/Horsethief
Scott	Senter	BLM – Klamath Falls	Upper Klamath
Dexter	Allen	USFS	Verde
Chad	Nieuhaus	BLM - Moab	Westwater
Sue	Baker	USFS --	White Salmon, Klickitat
Jackie	Diedrich	USFS – WSR program lead	Multiple rivers
Judy	Culver	NPS – Dinosaur NM	Yampa and Green through Dinosaur NM
Stacie	Faust	PA State Parks	Youghigheny

National & regional stakeholders		
David	Brown	AO
Kevin	Colburn	AW
David	Steindorf	AW
Tom	O'Keefe	AW
Marty	Wilson	GCPBA
Earl	Perry	GCPBA (and retired NPS)
Eric	Leaper	National Organization for River Sports
Michael	Greenbaum	Non-commercial boater
Eric	Leaper	NORS
Al	Ainsworth	NWRA
Mary	Fleischmann	NWRA
Richard	Martin	RRFW
Lynne	Westerfield	UI and AW (user survey)

Photography credits:

Grand Canyon photo on cover and page vi by Bo Shelby.
Cover art by Kathy Shelby.
Niobrara River tubers & boaters on page 8 courtesy of National Park Service (thanks to Stuart Schneider).
McCloud River photos on page 36 by Doug Whittaker (top) and Bo Shelby (bottom).
Kenai River driftboat on page 62 by Doug Whittaker.
Klamath River put-in on page 64 by Doug Whittaker.
Grand Canyon motor and oar rafts on page 69 by Doug Whittaker.
Beach on Main Salmon River on page 71 by Doug Whittaker.
Deschutes River put-in on page 76 courtesy of Bureau of Land Management (thanks to Lynette Ripley).

The **River Management Society** (RMS) is a national nonprofit professional organization. The mission of the Society is to support professionals who study, protect, and manage North America's rivers. RMS grew from the former Interagency Whitewater Committee (established in 1972), and the 1996 merger of the American River Management Society (established in 1988) and River Federation (established in 1985). Dedicated to holistic river management, its diverse membership includes federal, state, and local agency employees, educators, researchers, consultants, organizations, and citizens from the private sector. RMS's main objective is to advance the profession of river management by providing managers, researchers, educators and others a forum for sharing information about the appropriate use and management of river resources. RMS continues to build its organization with a broad base of expertise in river management and stewardship, including an ecosystem approach to recreation, water quality, riparian health, and watershed management. More information about RMS is available at www.river-management.org.

The **Bureau of Land Management** (BLM) was established in 1946 through the consolidation of the General Land Office (created in 1812) and the U.S. Grazing Service (formed in 1934); BLM responsibilities are also addressed in the Federal Land Policy and Management Act of 1976. The BLM is responsible for the management and conservation of resources on 258 million surface acres, as well as 700 million acres of subsurface mineral estate. These public lands make up about 13 percent of the total land surface of the United States and more than 40 percent of all land managed by the Federal government. Most of the public lands are located in the Western United States, including Alaska, and are characterized predominantly by extensive grassland, forest, high mountain, arctic tundra, and desert landscapes. The BLM manages multiple resources and uses, including energy and minerals; timber; forage; recreation; wild horse and burro herds; fish and wildlife habitat; wilderness areas; and archaeological, paleontological, and historical sites. The BLM's Division of Recreation and Visitor Services oversees various national programs affecting recreation management on BLM public lands, including many rivers. BLM Recreation engages organizational partnerships and public participation into its overall recreation management and planning strategies for public lands. BLM Recreation is working to improve understanding of these national programs, and to improve communication and coordination with its stakeholders. Working with its partners at the local, state, and national levels, the BLM will meet its mission of sustaining the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. More information about BLM Recreation is available at blm.gov/wo/st/en/prog/Recreation/recreation_national.html.

Confluence Research and Consulting conducts studies or assists with planning efforts related to natural resource use and management, often with a focus on recreation in river settings. CRC has particular expertise with visitor impact management and carrying capacity in recreation settings, instream flows for recreation, navigability determinations, and the human dimensions of wildlife management. CRC has offices in Corvallis, Oregon and Anchorage, Alaska. More information about CRC is available at www.confluence-research.com.