Western Oregon Forest Management Plan

DRAFT Chapter 2 Management Approach

In October 2020, the Board of Forestry (BOF) directed the State Forests Division to continue the development of a Forest Management Plan (FMP) and Implementation Plans (IPs) for about 640,000 acres of Oregon Department of Forestry (ODF)-managed lands west of the Cascades. The mission of the Western Oregon State Forests FMP and IP project is to implement the social, economic and environmental values required of state forests, in conjunction with the Western Oregon State Forests Habitat Conservation Plan (HCP). If approved, the Western Oregon State Forests FMP would replace the current Northwest Oregon and Southwest Oregon State Forests FMPs.

ODF is sharing portions of the Draft FMP in advance of a virtual meeting open to the public scheduled for Tuesday, February 7, 2023. This meeting will offer the public an opportunity to learn about the forest management planning process and primary components. There will also be an update on the Western Oregon State Forests HCP and associated National Environmental Policy Act (NEPA) process.

What is this Chapter?

Chapter 2 Management Approach describes ODF's ecologically sustainable approach for the management of state forest lands in western Oregon. The chapter describes how planning and operations will work across the landscape to provide social, economic, and environmental benefits. Chapter 2 is currently in draft form.

Stakeholders and members of the public will have the opportunity to ask questions at the February 7 Public Meeting.

CHAPTER 2

Management Approach (DRAFT)

2.1 Sustainable Delivery of Ecosystem Services

Public forests across the nation were established for the benefit of the people and have always provided for multiple uses. The understanding of these uses and how they are interrelated has deepened and evolved over time from a focus primarily on production and harvest of wood products, with other benefits considered secondarily or separately (e.g., recreation) to (1) more emphasis on multiple uses with increased recognition of other important benefits and values (e.g., clean water, rare species, diverse recreation opportunities), but varying levels of integration; and (2) a much broader definition and recognition that the types of forest uses (i.e., goods and services) and associated benefits and public values are derived from forest ecosystems and ecological processes (Kline et al. 2013; Jaworski et al. 2018).

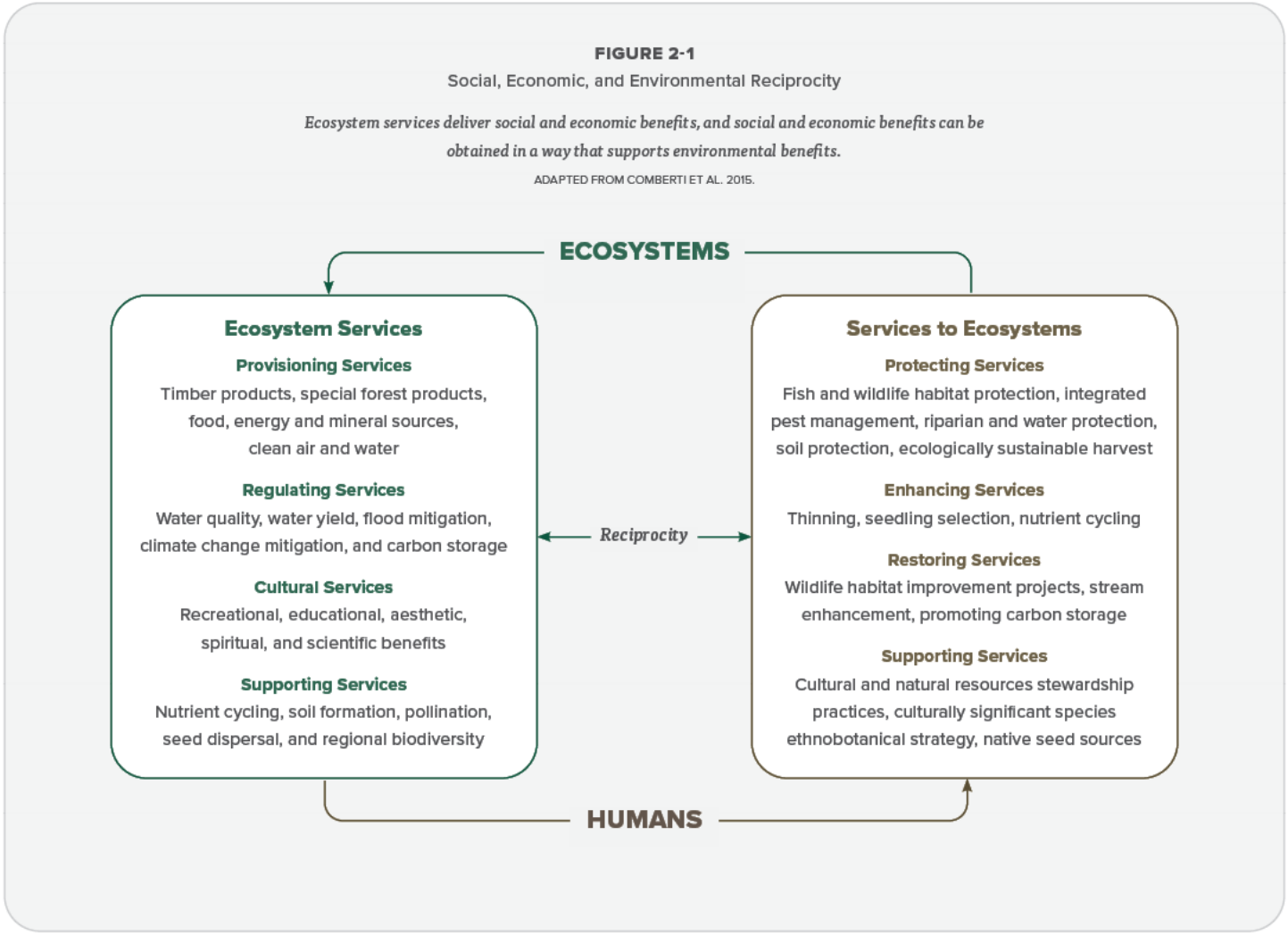
Ecosystem services are the benefits provided by ecosystems to humans; these services are categorized into the following four groups (Millennium Ecosystem Assessment 2005).

1. **Provisioning services**. Provisioning services are resources provided by forest ecosystems that include a sustainable and predictable supply of timber and *special forest products;* food, energy and mineral sources; and clean air and water.
2. **Regulating services**. Forests also help regulate resources including water quality, water yield, flood mitigation, climate, and carbon.
3. **Cultural services**. Forests provide recreational, aesthetic, spiritual, and scientific benefits, and values as numerous and diverse as the people and cultures that use them.
4. **Supporting services**. Forest ecosystems support the function of many systems and processes including nutrient cycling, soil formation, pollination and seed dispersal, and regional biodiversity.

In addition to identifying many important outcomes that contribute to community well-being, the concept of ecosystem services creates a framework that recognizes how social and economic needs are

supported by healthy ecosystems and how society provides services to those ecosystems by supporting their functions (Figure 2-1).

Figure 2-1 Social, economic, and environmental reciprocity. Ecosystem services deliver social and economic benefits, and social and economic benefits can be obtained in a way that supports environmental benefits.



Adapted from Comberti et al. 2015

The overall goal of an ecologically sustainable approach is a functional ecosystem that sustainably delivers ecosystem services. This approach to forest management is to sustain and support the ecological integrity (i.e., structure, composition, and function) and productivity of the forest, and thereby improve *resilience* and *capacity to adapt* to change over time (Franklin et al. 2018; Lindenmayer et al. 2012). Healthy, diverse, productive, and resilient forests maintain and enhance ecosystem services and the varied benefits the public derives from them and are the foundation upon which a sustainable working forests model is built (Spies et al. 2018).

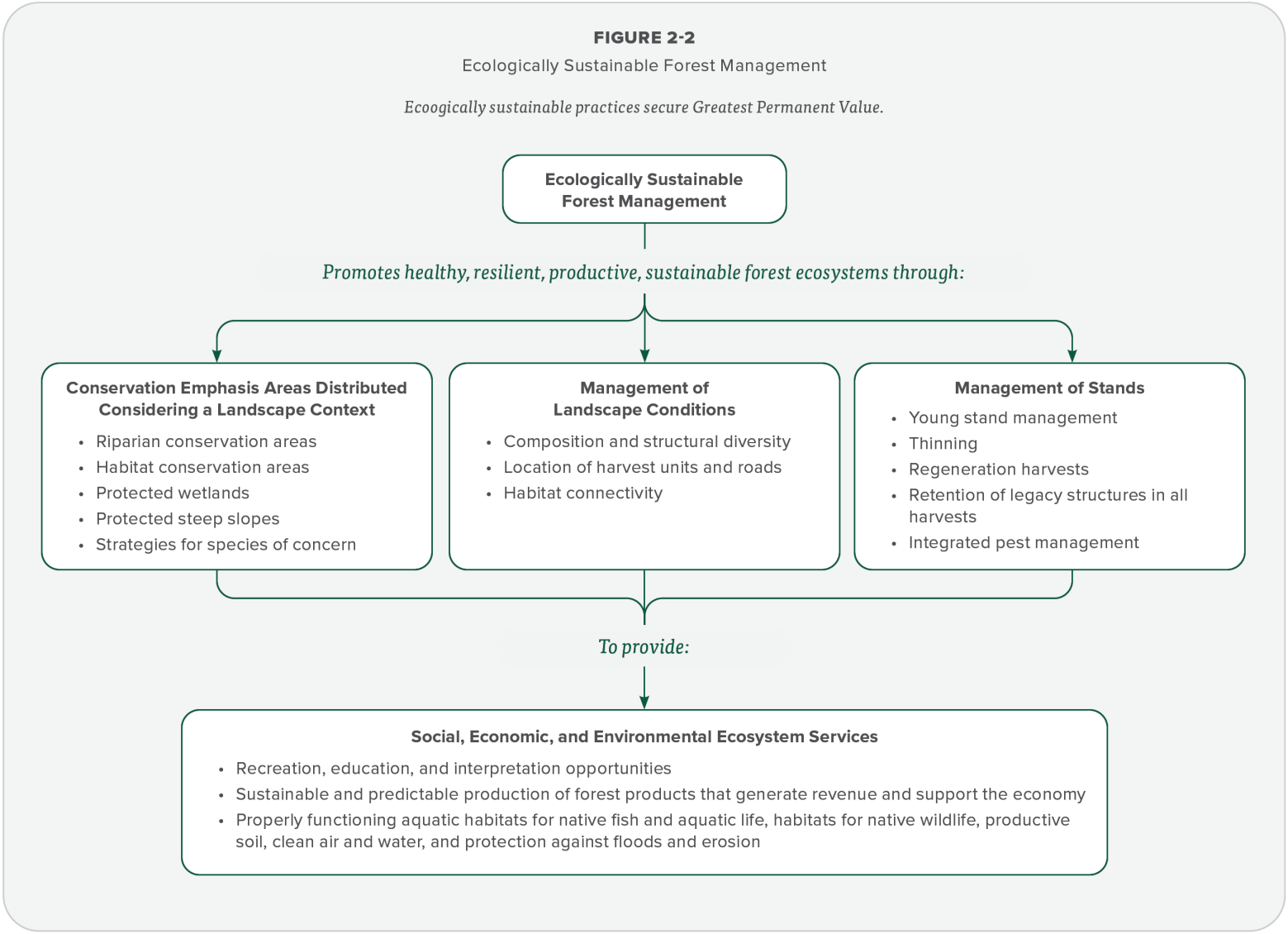
An ecologically sustainable approach to forest management views resources and benefits within the context of societal values (e.g., support for rural communities, recreational opportunities, natural resource-related economies) and the forest ecosystem (e.g., function, process, disturbance, resilience). Economic and other benefits to society are nested within social systems, which in turn are nested within environmental systems. In this framework the entire forest maintains ecological functions that provide the full suite of ecosystem services across the landscape and through time (Figure 2-2).

The ecologically sustainable approach acknowledges and anticipates change and uncertainty in forest conditions and disturbances, societal values and demands, forest product markets, future climate scenarios, and climate effects on forest productivity and biodiversity. To address change and uncertainty, the sustainable approach seeks outcomes that reduce risk to resources and increase future options to provide ecosystem services through an adaptive management framework and a focus on *adaptive capacity*. Adaptive management is a key tenet of an ecologically sustainable approach to forest management in a changing world and society, especially given uncertainty and risks associated with long-term planning. Adaptive capacity can be characterized in terms of resistance and resilience to both discreet disturbance events, such as wildfire and chronic long-term climate change (Puettmann et al. 2009; Aquilué et al. 2021). *Resistance* refers to the ability of a system to withstand the disturbance, whereas *resilience* refers to the ability to recover from the disturbance. The management approach reflects complex social and ecological systems that require integrated understanding of the relationships between resources distributed across space and time and their interacting processes. This understanding informs decision-making to achieve the overall goal of sustaining integrity, resilience, and function of ecosystems. In this context, the forest is part of larger systems that collectively provide ecosystem services. The following sections describes how ODF applies the ecologically sustainable approach to managing state forest lands.

2.2 An Ecologically Sustainable Approach to Managing State Forest Lands

Under the ecologically sustainable approach, ODF will manage state forest lands in western Oregon to support the delivery of ecosystem services into the future to provide greatest permanent value to Oregonians. The following sections layout how ODF manages state forest lands for ecological sustainability.

Figure 2-2 Ecologically sustainable forest management. Ecologically sustainable practices secure GPV.



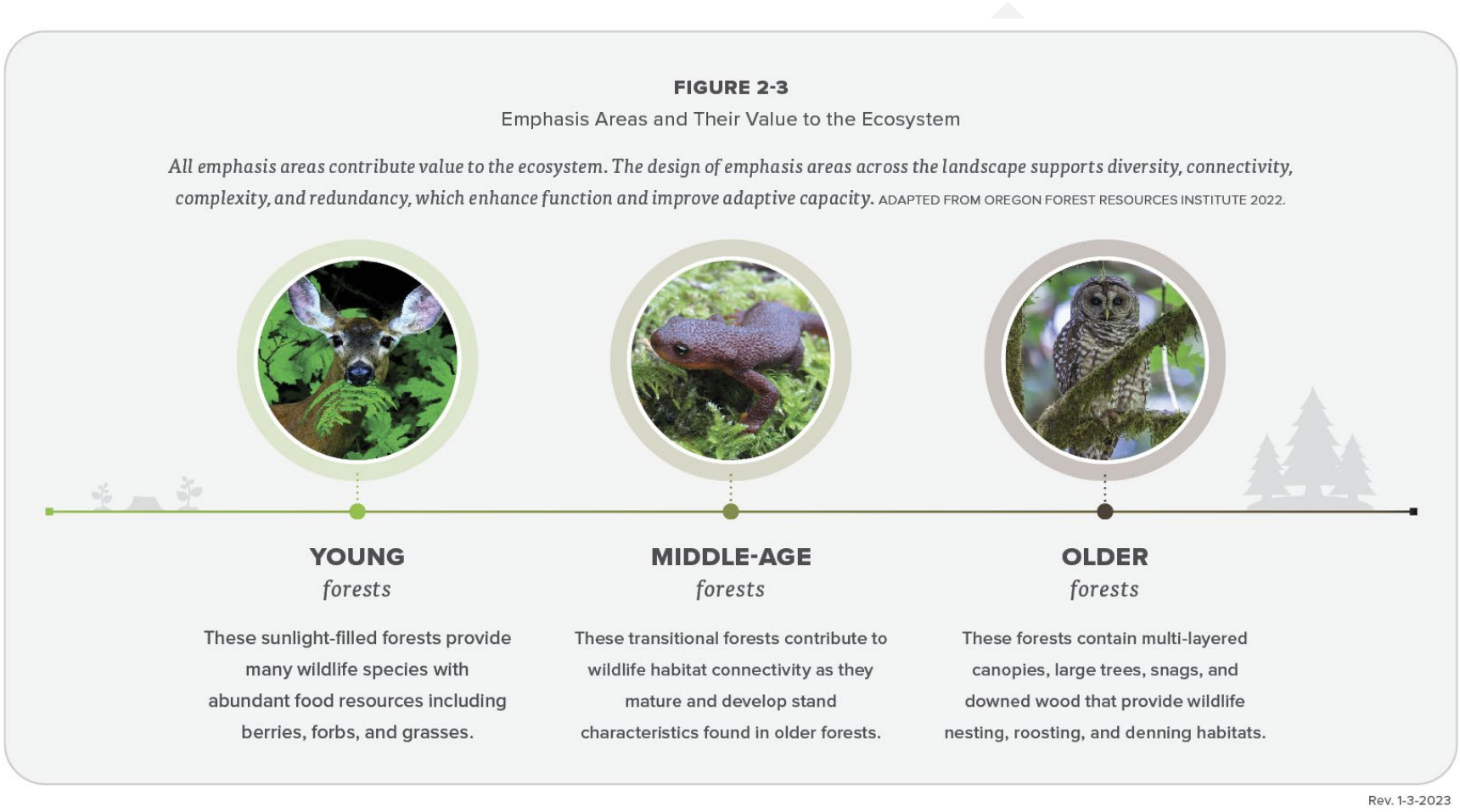
2.2.1 Emphasis Areas Integrate Ecosystem Services

GPV requires integrated resource management such that the resources are resilient and resistant to change. ODF's management approach achieves GPV by designing spatially explicit *emphasis areas* whose overlapping layout emphasizes different combinations of resource goals designed to complement each other to support long-term ecosystem function over time and across the landscape.

The Forest Land Management Classification System (FLMCS) is a method of describing the management emphasis of parcels of state forest lands and has been implemented in accordance with OAR 629-035-0055. The management emphasis of FLMCS identifies the extent to which a parcel of land can be managed for a variety of forest resources. It also identifies when a particular forest resource may need a more focused approach in its management, or possibly an exclusive priority in its management. The spatial locations of the emphasis areas are delineated by FLMCS. The resource objectives emphasized therein, and the rules governing management activities in them, are found in the *Western Oregon State Forests Habitat Conservation Plan* (HCP) (ICF 2022), operational policies, Oregon Administrative Rules (OARs), and other laws and regulations. The FMP's Integrated Goals and Strategies apply across the landscape but are more strongly emphasized in certain locations according to the particular area's combination of emphasis areas. Management activities in any particular area must be designed to emphasize the resource goals according to the emphasis areas that apply in that particular area. The spatial layout of emphasis areas is intentionally designed with ecosystem function and related processes in mind. In particular, the HCP's Habitat Conservation Area (HCA) layout, as discussed in HCP Chapter 3, Section 3.2.1.2, *HCP Conservation Areas*, is complemented by adjacent portions of the landscape that are more actively managed. HCA layout provides late seral habitat connectivity and complexity, while more actively managed adjacent areas provide early and mid-seral habitat diversity. Forest stand and landscape diversity, complexity, and habitat connectivity support functional systems. This, in turn, promotes other elements of biodiversity and related ecosystem processes, such as seed and fungal spore dispersal, soil and nutrient cycling, water quality, and aquatic habitat, which further enhances function and improves adaptive capacity. These positive feedback loops foster ecosystem integrity and, thus, resistance and resilience to stochastic and chronic disturbance within stands and across the landscape (Carey 2007, Franklin et al. 2018). Both HCAs and more actively managed areas individually and collectively achieve resilience and resistance. Operational policies and riparian conservation areas (RCAs) further define and guide more actively managed areas to protect other resources where they benefit the most. In this way, the emphasis areas are integrated across the landscape, such that lands producing timber contribute to habitat value and protect ecosystem functions.

Figure 2-3 depicts how areas where timber is produced create younger forests, which supports different wildlife species than the older forests created by conservation areas. Together, adjacent timber production and conservation areas will be managed to support species *diversity* for both wildlife and silviculture, which improves GPV and supports adaptive capacity. An example of multiple management activities meeting multiple resource goals includes modified clearcutting and thinning to support scenic, recreation, and water quality goals.

Figure 2-3 All emphasis areas contribute value to the ecosystem. The design of emphasis areas across the landscape supports diversity, connectivity, complexity, and redundancy, which support functionality and adaptive capacity of the ecosystem.



Source: Oregon Forest Resources Institute 2022

The application of management strategies to increase resistance and resilience to climate change and other disturbances, and the trade-offs considered, will vary across the landscape depending on the specific emphasis of particular areas as designated by the FMP, HCP, FLMCS, and other laws or policies. FLMCS describes the type of management that will apply to a particular area of the land base; the appropriate range of activities for these areas; and the forest resource(s) the classification is intended to address. The HCP designates lands for habitat conservation and riparian conservation and commits to conservation actions across the forest. Legal requirements and policies further define requirements to protect resources. The FMP goals and strategies further define ecosystem benefits that will also guide management activity.

For example, FMP cultural goals and strategies include provisions for tribal access and culturally significant species, which is critical in honoring their ancestral ties to the landscape. Additionally, FLMCS and FMP strategies include recreational, educational, and interpretive considerations for *highly used recreational trail systems,* or an area that has *unique interpretive and educational qualities*. The following sections describe the emphasis areas and how landscape-level systems, processes, and risk are managed.

Forest Land Management Classification System

The FLMCS framework places all state forest land within one of four land management classifications: (1) General Stewardship, (2) Focused Stewardship, (3) Special Use, and (4) High Value Conservation Areas. The graphic on the following page lists the subclasses, which are assigned for the specific forest resources that require a Focused Stewardship, Special Use classification, or High Value Conservation Area classification.

General Stewardship

On state forest lands, timber revenue funds the majority of management activities, including habitat restoration, fuel management, recreation programs, and infrastructure. These funds are also the primary vehicle for providing economic benefits to rural communities across the state. Emphasis on production-oriented goals and related silvicultural strategies will, therefore, take priority on a significant portion of the landscape through time. Production of timber will be the primary objective in most General Stewardship lands. General Stewardship lands managed for timber provide a suite of ecosystem services such as clean water, carbon sequestration and storage, early seral wildlife habitat, and wood products.

According to the OAR, General Stewardship lands shall be actively managed "to provide healthy, productive, and sustainable forest ecosystems that over time and across the landscape provide a full range of social, economic, and environmental benefits to the people of Oregon" (OAR 629-035-0055(4)(a)).

General Stewardship lands will be primarily managed for sustainable and predictable supply of timber. Timber younger than the definition of *old growth* in the HCP is available for harvest.

General Stewardship lands provide more opportunities for harvest operations relative to other land classifications. Each harvest entry provides opportunities to increase the subsequent stand's adaptive capacity and reduce the severity of disturbance and climate change effects by addressing species mix, planting densities, and other factors to maintain productivity, diversity, resilience, and resistance. Retention of biological *legacies* (old growth, *live trees*, snags, downed wood) provide for additional structure, function, and diversity in regenerating stands (Lindenmayer et al. 2012). General stewardship lands may also employ fuel management to reduce the risk of ignition and spread of wildfire, while maintaining the standards set forth in the HCP and seeking alternative revenue streams, such as *biochar* and small-diameter wood products. Salvage harvest of damaged stands will ensure recovery of economic values and allow new stands to be established with the species mix and planting strategies that are most appropriate for conditions at that time and suited for predicted future climates.

Focused Stewardship

"Focused Stewardship lands include all those whose forest resources are managed using integrated management practices in a manner which is intended to accomplish forest management planning goals." (OAR 629-035-0055(3)(b)) "Because one or more specific forest resources on these lands require heightened or focused awareness, supplemental planning and/or modified management practices may be required to achieve the goals of forest management plans, habitat conservation plans or legal requirements." (OAR 629-035-0055(4)(b))

Forest Land Management Classification System Subclasses

Each area designated as focused, special, or high value conservation stewardship is categorized according to subclasses that denote the resource emphasis.

SUBCLASSES

- Administrative Sites (S)
- Agriculture, Grazing, Wildlife Forage (F) (S)
- Aquatic and Riparian Habitat (F) (H)
- County or Local Comprehensive Plan (S)
- Cultural Resources (F) (S)
- Deeds (F) (S)
- Domestic Water Use (F) (S)
- Easements (F) (S)
- Energy and Minerals (F) (S)
- Operationally Limited Recreation (S)
- Plants (F)
- Recreation (F) (S)
- Research/Monitoring (F) (S)
- Transmission (F) (S)
- Unique Threatened or Endangered Plants (H)
- Visual (S)
- Wildlife Habitat (F) (S) (H)

STEWARDSHIP CLASS

- (F) Focused Stewardship
- (S) Special Use
- (H) High Value Conservation Area

There are several subclassifications of Focused Stewardship lands, including areas with cultural resources or recreation, where additional management strategies are designed to maintain and protect these resources. These additional strategies are considered through supplemental planning process (OAR 629-035-0055(3)(b)), described in ODF operational policies and state and federal regulations.

Special Use

Special Use areas shall be "managed for a specific forest use. Integrated management is conducted on these lands to the extent possible without interfering with the management of the specific forest use" (OAR 629-035-0055(4)(c)).

On lands classified as Special Use, "a forest management plan, habitat conservation plan, or other legal requirement identifies one or more of the following: a legal or contractual constraint dominates the management of the lands and precludes the integrated management of all forest resources; lands are committed to a specific use and management activities are limited to those that are compatible with the specific use" ((OAR 629-035-0055(3)(c)). The Tillamook Forest Center and Smith Homestead day use area are examples of Special Use lands.

High Value Conservation Areas

High Value Conservation Areas (HVCAs) shall be managed for a specific conservation value. "Forest management may be conducted to the extent that forest management activities promote the conservation values and are consistent with applicable legal requirements and will avoid long-term adverse impacts to the specified conservation value" (OAR 629-035-0055 4(d)). HCAs and RCAs are examples of HVCAs.

HCP Conservation Areas

HCP Chapter 4, *Conservation Strategies,* defines the two types of conservation areas: HCAs and RCAs. HCAs and RCAs are HVCAs. They are delineated and guided by the requirements described in the HCP. Within HCAs and RCAs, opportunities to increase adaptive capacity through silvicultural activities are more limited than they are for General Stewardship lands. However, certain conservation actions to promote habitat enhancement will provide specific points to promote resiliency and resistance. For example, stream restoration and culvert replacement are allowed in RCAs, which can increase resilience of streams and roads to floods, as are treatment of Swiss needle cast (SNC)-infected stands and hardwood-dominated stands in HCAs. Reforestation will use a diverse tree species mix with limited site preparation and young stand management, introducing complexity early in stand development. Variable-density planting will promote spatial heterogeneity, complexity, and diversity (e.g., robust shrub and forb communities) in closed-canopy, simple stands.

Management of HCAs will incorporate principles of *ecological silviculture* and will be based on natural systems (Palik et al. 2021). Ecological silviculture is based on the spatial heterogeneity found in unmanaged old forests and seeks to emulate stand initiation and development processes that result from small-scale natural disturbances (e.g., windthrow, lightning, insects, disease) to promote within-stand diversity and complexity. Natural history (forest development, dynamics, species, and structures)

is a model for management and provides insight into potential pathways, trajectories, limitations, risks, and options. Natural forest development principles (e.g., disturbance, succession) inform management strategies and prescriptions related to stand initiation and development, maintenance of forests, and landscape mosaics (Carey 2007).

The goal for individual forest stands and landscapes is not to emulate the past or provide equal amounts of all stages and conditions (Franklin et al. 2018). The historical range of variation is used as a tool for evaluating balance and identifying stand types and conditions that may be rare on the landscape or provide other important services (Wimberly 2002; Wimberly and Ohmann 2004; Spies et al. 2018). It is a guide for understanding changes in forest dynamics, patterns, and processes over time, which can be used to better understand ecosystem needs and anticipate the effects of management activities or future change. For example, restoration activities are informed by the historic stand structures, but the focus of management is on improving forest health, biodiversity, productivity, and resilience (Franklin et al. 2018).

At the stand level, species composition, structural complexity, and function beget resilience and adaptive capacity (Franklin et al. 2018). Management activities will seek to create, restore, and maintain structurally complex and biologically rich stands, considering local forest types and other site-specific conditions. Prescriptions should maintain and restore complex and diverse forests of all types and stages, and activities should be timed appropriately within the context of natural forest development (Carey 2007).

The location of limited treatments in HCAs can also be a factor to help build resistance to disturbance. Fuels can be managed in portions of HCAs identified as high fire risk, using variable-retention harvest that also creates spatial heterogeneity for habitat development purposes. Allowing for passive development of complex older stands also increases resilience and adaptive capacity. Both active and passive management can be used to promote complex stands and heterogeneous landscapes that enhance forest resistance and resilience. While treatments and management actions in HCAs will be designed to increase habitat quantity and quality, some of these treatments will result in merchantable timber.

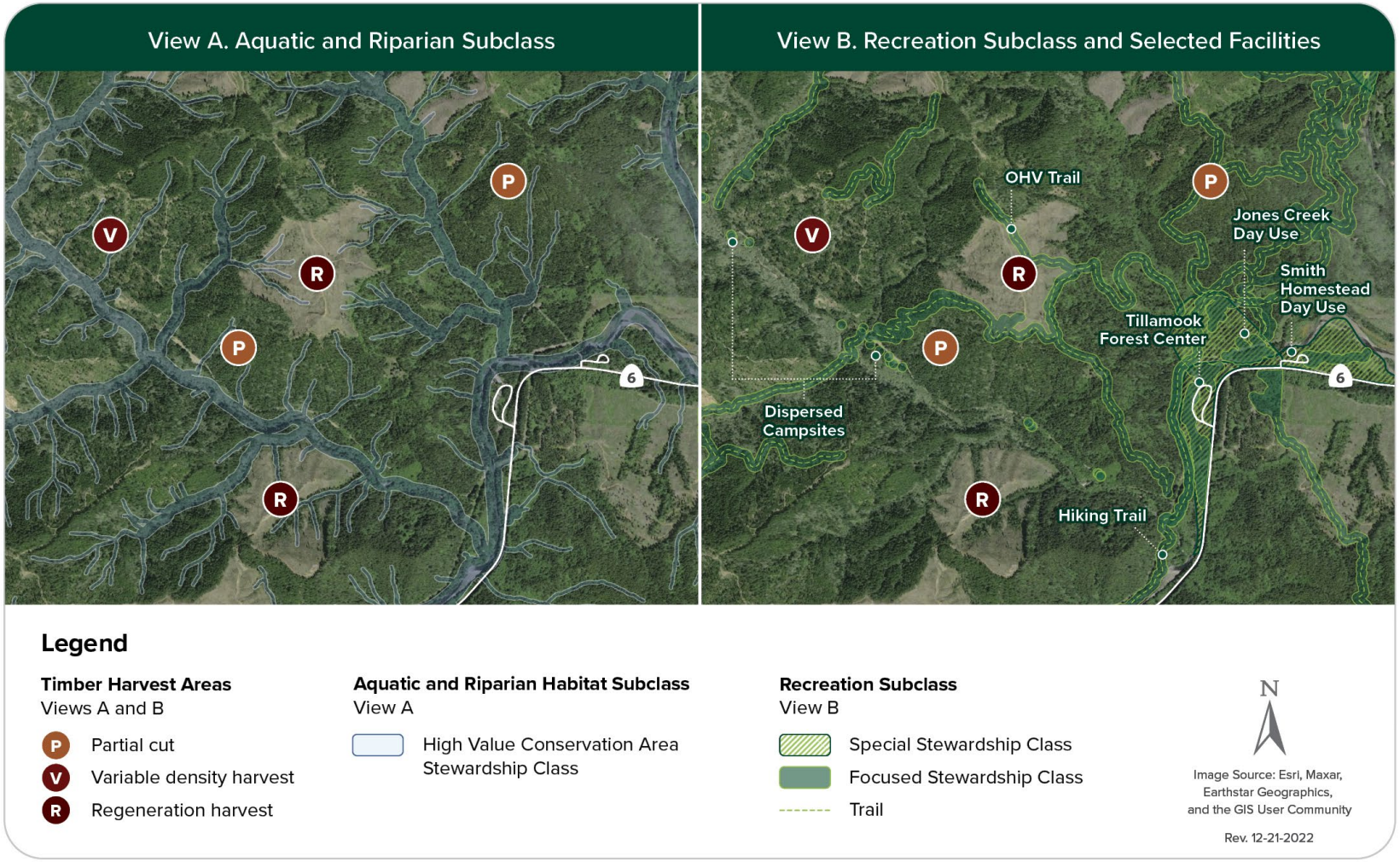
The varied size and distribution of HCAs across the landscape, coupled with more regular distribution of RCAs, will create an effective patchwork of habitat across the plan area, which supports resilience. In some areas, HCAs will provide refugia for climate-sensitive flora and fauna. RCAs will produce increasingly complex and resilient riparian conditions over time. Figure 2-4 shows how RCAs, recreation, and timber harvest activities are integrated across the landscape.

Figure 2-4 Examples of emphasis areas across the landscape. Active management is integrated across the landscape guided by resource management emphasis areas.

FIGURE 2-4

Examples of Emphasis Areas across the Landscape

Active management is integrated across the landscape guided by resource management emphasis areas.



2.2.2 Implementation Considerations across the Landscape

HCP conservation strategies, FMP strategies, and the planning process integrate ecosystem services across the landscape. Planning and operations work together across the landscape to provide social, economic, and environmental benefits. During the planning process, management activities are reviewed to ensure alignment with goals and strategies. Important habitat types and ecological features are identified and managed according to the HCP and FMP. Consideration is given to recommendations, Implementation Plan targets, best management practices (BMPs), and operational policies to achieve GPV (Figure 2-5). The resulting landscape provides a range of integrated social, economic, and environmental benefits.

For example, harvest operations on General Stewardship lands are planned with the emphasis of revenue and timber production. Other values are integrated into these operations. Timber produced contributes to carbon storage in harvested wood products. RCAs and leave tree and downed wood requirements defined in HCP Chapter 4, *Conservation Strategies*, contribute to carbon storage on the landscape, fish and wildlife habitat, and clean water. A Special Stewardship-designated campground adjacent to a harvest area may receive consideration for visual buffering per the FMP strategies. A special stewardship domestic water intake may be adjacent to or located in a harvest area and is protected according to applicable rules and policies.

While specific areas on the landscape have social, economic, and environmental emphasis, operations are designed considering multiple ecosystem services. The result is an ecologically sustainable landscape that produces social, economic, and environmental ecosystem services that overlap with varying levels of emphasis.

2.2.3 Adaptive Capacity, Landscape Context, and Adaptive Management

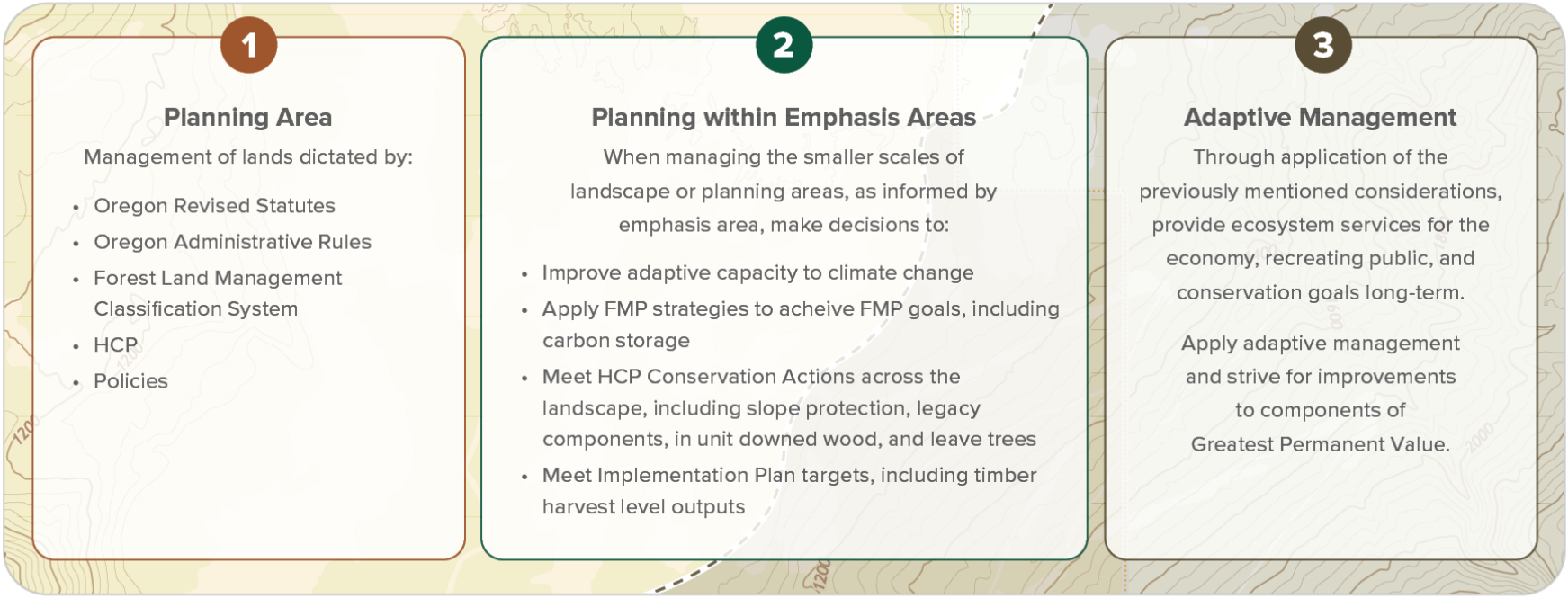
To provide GPV, state forest lands management must sustain interrelated social, economic, and environmental benefits while continuing to promote ecosystem and landscape integrity and adaptive capacity in the face of change and uncertainty. Resources change over time, economic cycles produce swings in the value of timber harvested, species move across the landscape, disturbance events alter conditions, and public use patterns change. Regional and global conditions such as climate change create uncertainty around future forest productivity and health, species distributions and biodiversity, and disturbance patterns. To deliver ecosystem services in the face of change and uncertainty, the management approach focuses on building adaptive capacity, evaluates trade-offs between ecosystem services across the landscape, and leverages adaptive management to address uncertainty and change over time. Additional details on adaptive management are provided in Chapter 5, *Guidelines*.

Figure 2-5 Application of the ecologically sustainable approach to deliver ecosystem services. The emphasis areas, policies, and strategies are applied across the planning area to support ecological function, decision-makers strive to further improve conditions, and plans are adapted to respond to change and improve performance over time.

FIGURE 2-5

Application of the Ecologically Sustainable Approach to Deliver Ecosystem Services

The emphasis areas, policies, and strategies are applied across the planning area to support ecological function, decision-makers strive to further improve conditions, and plans are adapted to respond to change and improve performance over time.



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Adaptive Capacity

Increasing the adaptive capacity of the landscape reduces risk associated with change and uncertainty. Resistance reduces the likelihood of the negative impact, while resilience reduces the degree of negative consequences. Examples of management actions that promote resistance to disturbance include fuel management and establishment of fuel breaks prior to a fire event that can reduce the likelihood of fire spread and severe burn. Examples of management options that promote resilience to disturbance include reforesting with diverse timber species that can reduce the extent of insect and disease on timber inventory or enhancing stream habitat conditions throughout a watershed to ensure sufficient aquatic resources are available to accommodate increasing fluctuations in streamflow over time. In general, species diversity, structural complexity in HCAs and RCAs, and spatial heterogeneity that are redundant across the landscape contribute to resilience—the ability of the forest to retain ecosystem function and regenerate in response to both discreet events and changing conditions.

Landscape Context

Evaluating trade-offs that are linked to different ecosystem services is considered paramount to evaluation and revision of desired conditions and related strategies (Franklin et al. 2018). Considerations of trade-offs include but are not limited to management emphasis (e.g., timber, aquatic and riparian function, wildlife conservation and habitat diversity, scenic, recreation), desired future condition, integration of resources, applicable policy restrictions, landscape context, and revenue goals.

Trade-offs are considered at every level of planning. For example, at the HCP level, they were considered in the designation of HCAs and RCAs and the development of conservation goals and objectives. At the Implementation Plan (IP) level, they are considered in deciding the type and amount of activities that will occur over the life of the IP in a particular region. Detailed trade-offs are considered during Operations Plan (OP) development, which designates specific operations in shorter time periods to achieve the IP. At the adaptive management level, trade-offs are evaluated prior to making any changes to IPs, FMPs, or the HCP. Additional details are provided in Chapter 5, *Guidelines*.

Adaptive Management

Adaptive management is a system of making, implementing, and evaluating decisions, which recognizes that ecosystems and society are always changing. It is a systematic and rigorous approach to learning from actions, improving management, and accommodating change. Under an adaptive management framework, the process of constant improvement and refinement requires shorter, more flexible evaluation intervals and simulation periods (Franklin et al. 2018; Spies et al. 2018) so that resource objectives can be assessed and management techniques can be adjusted. Long-term goals are important for setting pathways and adjusting trajectories, but given uncertainty and change, it may not be realistic or productive to look out beyond two or three decades (Spies et al. 2018). IPs set mid-range objectives. OPs are more near-term, for example a 1- to 2-year time horizon. In general, less reliance on models and more reliance on analysis, innovation, and adjustment is advisable (Kline et al. 2016; Franklin et al. 2018).

Adaptive management decisions should be made in a careful, informed, well-structured framework tied to monitoring and evaluation of strategy performance. Additional details of this decision framework are presented in Chapter 5, *Guidelines*.

2.3 Strategy Integration for Ecosystem Services Delivery

The principles of an ecologically sustainable management approach are reflected in Chapter 3, *Integrated Goals and Strategies*. Each goal represents a forest resource, and the management strategies recognize their interrelated nature by serving multiple goals. For example, and as discussed above, silvicultural strategies are designed to support multiple goals: timber production ; fish and wildlife habitat enhancement; wildfire risk mitigation; special forest products; soil processes; recreational, educational and interpretive opportunities; and carbon storage.

The strategies address climate change by managing resistance and resilience to discrete disturbance events and chronic or stochastic change. While HCAs and RCAs will receive less intensive management, and General Stewardship lands will have a timber production focus, the entire forest functions as a whole and, therefore, considers the dependencies between ecosystem services to provide sustainability over time. The primary goals of the emphasis areas on the landscape will guide management therein.

The strategies support rural economies and public services by aiming to produce sustainable and predictable timber supply. The strategies place emphasis on the function of economic systems that support forest management and recognize that specific approaches and the levels of commitment depend on economic goals and circumstances. Maintaining economic benefits is key to supporting implementation of all plan activities and maintaining public trust in ODF's ability to deliver plan outcomes. Chapter 3, *Integrated Goals and Strategies*, and Chapter 4, *Guidelines*, layout the specific interrelationships between ecosystem services and the frameworks for implementation, operations, and adaptive management.

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