

## 4 Assessing Designated Areas

### 4.1.1.1 Important Information Evaluated in this Phase

The Luquillo Mountains, with their steep elevational gradient, highly dissected topography, and wet climate provide a variety of habitats and diverse flora. During the past 60 years, the entire Luquillo Experimental Forest (LEF) as well as certain areas within it have been recognized or designated for particular uses. Designated areas are identified on the El Yunque National Forest (EYNF) because of their unique or special characteristics. The EYNF has statutorily designated wilderness areas, wild and scenic rivers, and national historic trails. Administratively designated areas include inventoried research natural areas and experimental forest areas.

### 4.1.1.2 Nature, Extent and Role of Existing Conditions and Future Trends

#### *Wilderness Areas*

During the mid 1930s, the visiting Forest Service chief referred to the area encompassing El Toro as “the ruggedly beautiful wilderness of the Luquillo Mountains” (Silcox and Kircher 1936). It was designated by Congress in 2005, and occupies about 36 percent of the 11,300 hectare LEF in northeastern Puerto Rico. Today, El Toro Wilderness is the only designated tropical wilderness area in National Forest System (Weaver 2011).

El Toro covers 36 percent of the LEF, making it proportionally large. It extends from 370 to 1,074 meters in elevation and is occupied by four forest types found in the mountainous Caribbean: Lower Montane Rain Forest, Montane Rain Forest, Palm Brake, and Dwarf Forest. El Toro encompasses the largest block of undisturbed vegetation in Puerto Rico and is largely buffered by the LEF. The Luquillo Experimental Forest contains 225 tree species, 45 of them endemic to Puerto Rico, and 23 to the LEF alone; 150 species of ferns; 79 species of orchids; 11 native bats; 101 birds; 19 native reptiles, 8 endemic; 14 native amphibians, 8 endemic; and 6 native fish species. Most of these occupy the El Toro Wilderness.

Naturalness, wildness, and protection from human influence are some of the values of wilderness to society. However, during the past 17 years, rapid suburban development has occurred in areas adjacent to the El Toro Wilderness (Lugo and others 2004; Gonzalez 2001). Some of the lands of what now is the El Toro Wilderness Area used to be El Toro Roadless Area; these lands have been managed since 1903. Currently, active cooperation with the local government is required to enforce buffer zone legislation around the Forest (Lugo and others 2000, 2004). Future management of the wilderness needs to define goals and desired conditions, and needs to recognize the issues or problems of reaching desired conditions (McCool and Cole 1997).

The 1997 land management plan identified Bano de Oro as an area of potential need and opportunity for additional wilderness area. The Forest Plan identified plan components for the protection of its roadless area condition. While this assessment redefines the ecological description of the area in greater detail, the natural and pristine conditions of Bano de Oro remain the same.

There is no approved wilderness management plan. Minimum requirement guides are in place for management of the Puerto Rican parrot habitat. An airplane crash burned 0.5 acres of land in 2011.

*Wild and Scenic Rivers*

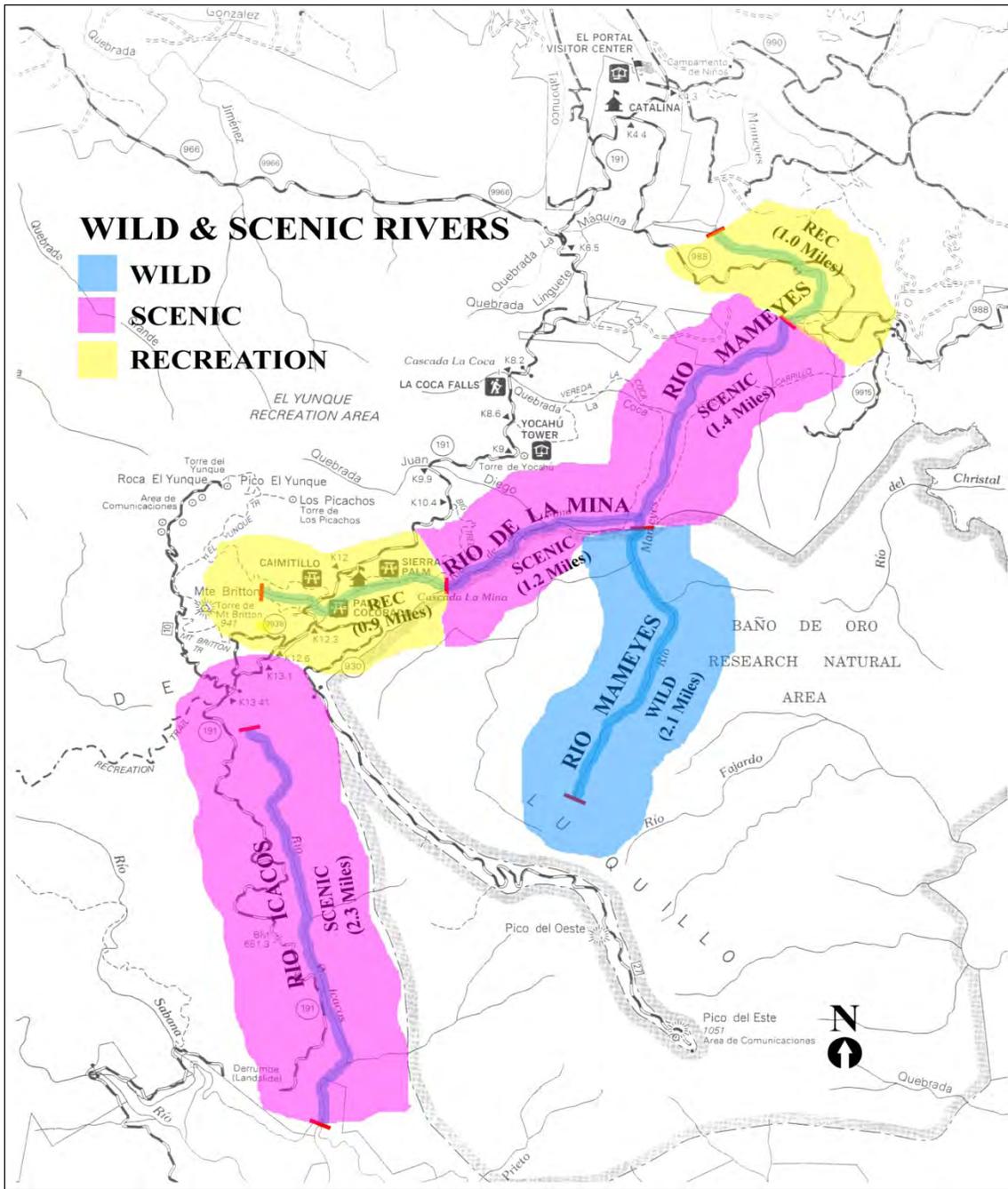
Congress designated portions of the Rio Mameyes, Rio de la Mina, and Rio Icacos into the National Wild and Scenic Rivers (NWSR) system through the Caribbean National Forest Wild and Scenic Rivers Act of 2002 (P.L. 107- 563, December 19, 2002) (Map 4-1). Rio Mameyes has a 1.6-mile “wild” segment, a 1.4-mile “scenic” segment, and a 1.0-mile “recreation” segment. Rio de la Mina has a 0.9-mile “recreation” segment and a 1.2-mile “scenic” segment. Rio Icacos has a 2.3-mile “scenic” segment. These are the only tropical rivers within the national wild and scenic rivers system and should remain protected through management guidelines.

The three rivers originate in the upper elevations of the Caribbean National Forest. The Rio Mameyes and Rio de la Mina flow in a northerly direction and have outstanding scenic, biological, geological, hydrological, recreation and historic value while the Rio Icacos flows in a southerly direction and has outstanding scenic, recreational, hydrological, historic and cultural values and ecological values. The wild and scenic river corridors are less than 0.25 mile in width from each bank of the creek. The area within the corridors totals approximately 2,848 acres. all of which is National Forest System lands.

The Rio Mameyes Watershed covers 4,403 acres within the Forest, or 15.7 percent of the Forest. Water quality is optimum within the study area of the upper segment, since the entire corridor is located in the Baño de Oro Natural Area and no development exists. Due to steep slopes, no significant flood plains occur. There are approximately 73 acres of riparian wetlands along the Rio Mameyes segments. The Rio de la Mina is part of the Mameyes Watershed. The Rio de la Mina Subwatershed covers an area of 1,720 acres which equals 6.2 percent of the Forest. The Rio Icacos Watershed covers an area of 813 acres which equals 2.9 percent of the Forest.

The three rivers are very similar in that they all originate in the upper elevations of the Forest. There are large boulders along the shore and within the streams which make for many cascades and small waterfalls. The lush and varied vegetation that is found along the banks provide a very picturesque setting. Only the Rio Icacos has stream areas which are relatively flat with sand along the banks and the river bed.

A comprehensive river management plan was approved in 2010.



Map 4-1. Wild and scenic rivers

### *National Historic Trails*

This information is being developed.

### *Research Natural Area*

The 745 hectare Baño de Oro Research Natural Area was established in 1949 because it contained terrain unmodified by human activity, was surrounded and buffered by other Forest Service property, had four forest types found within the Luquillo Mountains (the Lower Montane Forest permanent plot was established in 1946 at 350 meters elevation), and was habitat for at least 40 species (Weaver 1994).

Baño de Oro measures 3.55 kilometers from north to south and 4.15 kilometers east to west. Total relief is 780 meters, ranging from 245 meters along Rio Mameyes in the north to 1,025 meters in elevation at Pico del Oeste on the south. The entire area, one of the wettest areas in LEF, receives additional moisture through fog interception on the summits. In 1997 forest planners proposed an expansion of the Bano de Oro to encompass a total of 2,580 hectares (USDA Forest Service 1997). The proposed addition is located to the south and east of the original research natural area.

The ecosystems represented are the products of centuries of evolution. The tract is sufficiently large to indefinitely support the flora and most of the fauna that it contains under current climatic conditions. Certain large animals such as the parrot, the broad-winged hawk, and the tanager could not persist if this area were managed in isolation. However, the entire Baño de Oro is surrounded by the LEF, which has been protected for over a century. Deliberate modification, such as extensive cutting, removal of plants or animals, or pollution of the waters, could have deleterious effects. In this respect, Pico del Este Road (route 930), which borders the Baño de Oro, is a potential problem. Discarding of refuse or disturbance of roadside vegetation could impact the area as the Forest receives more visitors (Weaver 1994).

### *Experimental Forest*

In 1976 the entire Luquillo Experimental Forest was designated as a Biosphere Reserve, which is an internationally protected area managed to demonstrate the values of conservation (Lugo 1987; Weaver 1994). The reserve provides a global network for cooperative research and demonstrates the sustainable use of resources.

The LEF is located in the Luquillo Mountains in the northeastern corner of the Island, approximately 30 miles (48.3 kilometers) east of the capital of San Juan. Most of the research conducted in the Luquillo Mountains until 1988 was of relatively short duration, from less than a year to a decade. The most comprehensive study H.T. Odum's Rain Forest Project, which in its time was the most comprehensive study of a tropical forest ever conducted, lasted only 5 years (1963 to 1968). Notable longer-term studies include (from 1942) monitoring of tree growth and survival under natural managed conditions (Drew et al. 2009; Brown et al. 1983); the recovery of vegetation after ionizing radiation (Taylor et al. 1995), and the recovery project for the endangered Puerto Rican parrot (Synder et al. 1987).