

USER NOTES: TULAROSA, NEW MEXICO, NATIONAL WETLANDS INVENTORY MAP

Map Preparation

The wetland classifications that appear on the Tularosa National Wetlands Inventory (NWI) Base Map are in accordance with Cowardin et al. (1977). The delineations were produced through stereoscopic interpretation of 1:110,000-scale color infrared aerial photographs taken in February, 1971, and in 1979. The delineations were enlarged using a zoom transferscope to overlays of 1:24,000-scale and 1:62,500-scale. These overlays were then transferred to 1:100,000-scale to produce the Base Map.

Field checks of the delineated wetlands of the Tularosa NWI Base Map were conducted in June, 1981 to determine the accuracy of the aerial photointerpretation and to provide qualifying descriptions of mapped wetland designations.

The user of the map is cautioned that, due to the limitation of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Changes in the landscape could have occurred since the time of photography, therefore some discrepancies between the map and current field conditions may exist. Any discrepancies that are encountered in the use of this map should be brought to the attention of Warren Hagenbuck, Regional Wetlands Coordinator, U. S. Fish and Wildlife Service, Region 2, P. O. Box 1306, Albuquerque, New Mexico, 87103.

Geography

The area covered by the Tularosa NWI Base Map is located in the central portion of the state of New Mexico. Bailey's Ecoregion Classification (1978) identifies it as Chihuahuan Desert Province, Grama-Tobosa Section (3211). It is characterized by portions of two multiple internally drained desert basins, the Jornada del Muerto and the Tularosa Basins. Separating the two basins are the San Andres Mountains. They are uplifted sedimentary formations having a north-south orientation and nearly bisect the mapped area. The elevation ranges from 4000 feet on the basin floors to 8200 feet in the San Andres. Soils are formed on colluvium or residuum, and are shallow and well drained. The topography is undulating to very steep (Bulloch and Neher 1980).

The basin topography is influenced by the character and structure of the rock formations and determined by erosive forces such as wind and surface runoff. Ancient stream benches and terraces are common, and arroyos serving as drainage channels have been formed in alluvial fans. Playas or dry lakes occur on basin floors, and extensive lava fields known as the Malpais cover a large area in the Tularosa Basin (Meinzer and Hare 1915). The soils in basins are typically alkaline formed on alluvium, or eolian material (Bulloch and Neher 1980).

Climate

The climate of the area is arid. Fall, winter, and spring are dry seasons. Precipitation occurs in July and continues through October usually as brief, isolated torrential storms. Average precipitation is 7-9 inches but may be as high as 19 inches in the mountains. Snowfall is generally light at lower elevations occurring infrequently from November through March. Average annual temperature is from 50-65°F. During the summer, the average daily maximum temperature is in the mid 90's, while an average daily minimum during the winter is in the high 20's (Bulloch and Neher 1980).

Wetland Communities

The desert basins drain into playas which can vary in size. The Palustrine Flat is a playa less than 20 ha., larger ones are classified as Lacustrine Littoral Flat. These playas represent Type 9 wetlands - Inland Saline Flats (Shaw and Fredine 1971). The salts are derived from weathering and leaching of rock material or may be dissolved from saline deposits (Meinzer and Hare 1915). The duration of standing water is variable and depends on the playa size and the amount of water. During periods of standing water, a variety of desert mammals such as the introduced gemsbok (Oryx gazella), migratory waterfowl and shorebirds may be found using the playas. These wetlands are typically unvegetated except for a few species of halophytic plants that are able to tolerate the high levels of salt.

Riverine Intermittent Streambed occurs as arroyos through bajadas and basin floors. These can be subjected to flash floods during the summer rains, but water availability is very brief. The vegetation associated with these drainages is characterized by mesquite (Prosopis glandulosa), four-winged saltbush (Atriplex canescens), and desert willow (Chilopsis linearis). Saltcedar (Tamarix chinensis) may be present when it is given the opportunity to germinate and where ground water can be tapped.

Alkaline springs occur in the basin and support growths of saltgrass (Distichlis stricta) and sedges (Carex sp.). The waters are ephemeral and they have Sand or Gravel bottoms. The White Sands pupfish (Cyprinodon tularosa) is endemic to this portion of the Tularosa Basin. It is listed as a state endangered species (Hubbard et al. 1979). The fish has only been found in the waters of Salt Creek, Mound Spring and Malpais Spring, but is abundant in its limited habitat.

In the San Andres Mountains, the Riverine Intermittent Streambeds occur as dry drainages of Bedrock-Boulders or Cobble-Gravel forming steep sided gullies or ravines. These are subjected to flash floods and water availability is brief, but pockets of water may persist in the bedrock forming pools or "tenajas" that may support growths of filamentous algae, or Chara.

Springs are found in the San Andres Mountains usually as seeps and sometimes producing small rivulets. Their permanence is dependent on the level of the water table. Around these springs and along their flow are growths of cottonwoods (Populus fremontii), coyote willow (Salix exigua), and saltcedar. These waters support aquatic invertebrate

fauna of Coleoptera (beetles), Ephemeroptera (mayflies), Tricoptera (caddisflies), Gastropoda (snails), Nematoda (roundworms), and serve as watering sites for various wildlife species such as the desert bighorn sheep (Ovis canadensis) and scaled quail (Callipepla squamata).

The Tularosa River and Three Rivers are found in the eastern portion of the Base Map. These are labeled as Riverine Intermittent Streambed. They bring runoff from the Sacramento Mountains onto the Tularosa Basin where the waters recharge the ground water supply. The channels are composed of Sand and Gravel. Their banks support a riparian community of saltcedar, Arizona walnut (Juglans major), ash (Fraxinus velutina), cottonwood, seep willow (Baccharis glutinosa), Apache plume (Fallugia paradoxa), skunkbush sumac (Rhus trilobata) and oak (Quercus grisea). This community is labeled as Palustrine Forested or Palustrine Scrub-Shrub.

Palustrine Open Water usually designates artificial impoundments. These are ponds that serve as livestock tanks or store irrigation water. They are usually maintained by windmills or other pumping devices. The water can vary from fresh to alkaline but the latter is more commonly found. The water in ponds used as livestock tanks are usually turbid and wetland vegetation is not established. Irrigation Storage ponds often have clear water supporting an Aquatic Bed of Chara. Cottonwoods grow along their banks and emergent growths of cattails (Typha sp.), Olney three-square (Scirpus olneyii) and softstem bulrush (Scirpus validus) fringe the shoreline. These ponds represent Type 11 wetlands - Inland Open Saline Water (Shaw and Fredine 1971).

Loss and Vulnerability

An increase in the use of ground water supplies in the Tularosa Basin for irrigation or for desalinization into drinking water may substantially lower the water table thereby reducing the already small number of wetlands in the area. Efforts should be made toward maintaining the existing wetlands whenever additional uses of the groundwater are considered.

NWI Code	Description	Common Name	Circular 39 Type	Characteristic Plant Species and Physiographic features
R4SB	Riverine Intermittent Streambed	arroyo, dry riverbed	--	Unvegetated. Sand to Gravel bottom Bedrock and Boulders
POW	Palustrine Open Water	tenaja	--	<u>Chara</u> Bedrock bottom
		farm pond	11	<u>Chara</u> , bulrushes (<u>Scirpus</u> , sp.), cattails (<u>Typha</u> sp.)
		stock tank	9	Unvegetated Sand to Mud bottom
PFL	Palustrine Flat	stock tank playa	9	Unvegetated Sand to Mud bottom
PFO/SS	Palustrine Forested/ Scrub Shrub	riparian bosque	--	Saltcedar (<u>Tamarix chinensis</u>), Arizona walnut (<u>Juglans major</u>), ash (<u>Fraxinus velutina</u>), cottonwood (<u>Populus fremontii</u>), seepwillow (<u>Baccharis glutinosa</u>), snakeweed (<u>Xanthocephalum</u> sp.) Apache plume (<u>Fallugia paradoxa</u>), skunkbush sumac (<u>Rhus trilobata</u>), oak (<u>Quercus grisea</u>)
L2FL	Lacustrine Littoral Flat	playa, dry lake	9	Unvegetated or Cockleburs, snakeweed, saltgrass Sand to Mud bottom

BIBLIOGRAPHY

The purpose of this report is to provide general information about wetland classifications found within the area covered by the Base Map. There has been no attempt to describe all wetlands occurring in the area nor provide complete faunal and floral lists of those wetlands discussed. The references listed below refer to literature cited in the text of this report as well as sources of additional information.

- Bailey, R. G. 1978. Description of the ecoregions of the United States. USDA For. Serv. Intermt. Reg., Ogden, UT. 77 p.
- Bullock, H. E. Jr. and R. E. Neher. 1980. Soil survey of Dona Ana County Area, New Mexico. USDA Soil Conserv. Serv. 177 p.
- Hendrickson, J. 1977. Saline habitats and halophytic vegetations of the Chihuahuan desert region in R. H. Wauer and D. H. Riskind (eds.). Transactions of the Symposium on the Biological Resources of the Chihuahuan Desert Region - United States and Mexico. USDI Nat. Park Serv. Trans. and Proc. Series No. 3. 658 p.
- Hubbard, J. P. 1978. Revised check-list of the birds of New Mexico. New Mexico Ornithol. Soc. Publ. No. 6. McLeod Print. Co., Albuquerque, NM. 110 p.
- Hubbard, J. P., M. C. Conway, H. Campbell, G. Schmitt, and M. D. Hatch. 1979. Handbook of species endangered in New Mexico. New Mexico Dept. Game and Fish. Santa Fe, NM. 187 p.
- Meinzer, O. E. and R. F. Hare. 1915. Geology and water resources of Tularosa Basin, New Mexico. Wash., D.C. USDI Geol. Surv. Water-Supply Pap. 343. 317 p.
- Shaw, S. P. and C. G. Fredine. 1971. Wetlands of the United States, their extent and their value to waterfowl and other wildlife. U. S. Fish and Wildl. Serv. Circ. 39. 67 p.
- Suminski, R. R. 1977. Life History of the White Sands pupfish and distribution of Cyprinodon in New Mexico. Master's Thesis, New Mexico State Univ. Las Cruces, NM. 80 p.
- U. S. Fish and Wildlife Service. 1954. Wetlands inventory - New Mexico. USDI Off. River Basin Studies Reg. 2. 16 p.