

# Sinaloa Riparian Evergreen Forest and Woodland

These diverse tropic-subtropical streamside communities extend northward into our area to as far north as the lowermost Río Yaqui and its tributaries. There, at their northern extremity, they are mostly below 760 m elevation, but may extend to as high as 1,100 or 1,500 m farther south in the region around Alamos (Gentry, 1942; Felger, 1971). Contained within subtropical deciduous forest and thornscrub, the contrast in winter between these evergreen and semi-evergreen bottomland communities with adjacent, bare hillsides is striking.

Overstory species include a number of stately, tropic-subtropical trees, occurring alone or as mixtures (Figs. 185, 186). In the Southwest, these include several species of wild figs (*Ficus* spp.), a cottonwood (*Populus dimorpha*), Goodding Willow, palms (*Sabal uresana*, *Erythea aculeata*, *Clethra lanata*), and the stately Montezuma Cypress or Cedros (*Taxodium mucronatum*); overstories may be closed (forest) or open (woodland). At higher elevations several warm temperate trees, such as sycamore, the Evergreen Magnolia (*Magnolia schiediana*) and oaks may join the forest assemblage (Felger, 1971). Lianas (*Arrabidaea litoralis*, *Marsdenia edulis*, *Gouania mexicana*) and the climbing *Pisonia capitata* increase diversity. Tropical epiphytes are represented by the orchid *Oncidium cebolleta* and bromeliads (e.g., *Tillandsia inflata*, *Hechtia* spp.). A characteristic understory shrub is Garabato (*Celtis iguanaea*). Other understory species according to Gentry (1942) and Felger (1971) are:

|                            |                                  |
|----------------------------|----------------------------------|
| <i>Bacopa monnieri</i>     | <i>Prosopis juliflora</i>        |
| <i>Begonia</i> spp.        | <i>Rotala ramosior</i>           |
| <i>Eustoma exaltatum</i>   | <i>Samolus ebracteatus</i>       |
| <i>Fuirena simplex</i>     | <i>Sartwellia mexicana</i>       |
| <i>Gratiola brevifolia</i> | <i>Sassafridium macrophyllum</i> |
| <i>Guazuma ulmifolia</i>   | <i>Selaginella</i> spp.          |
| <i>Heteranthera limosa</i> | <i>Sesbania sesban</i>           |
| <i>Oreopanax salvinii</i>  | <i>Stanhopea</i> spp.            |
| <i>Pithecellobium</i> spp. | <i>Vallesia glabra</i>           |
|                            | <i>Vitex mollis</i>              |

These communities host a large and varied animal community. This fauna has been poorly investigated but includes such large and spectacular species as the Jaguar and the smaller Ocelot (*Felis pardalis*). Heteromyid rodents (*Dipodomys* spp. and *Perognathus* spp.) are common in the region but not particularly characteristic of riparian zones. Cotton rats (*Sigmodon hispidus*, *S. minimus*) tend to be more abundant near streams and other wetlands, and troops of Coati (*Nasua nasua*) forage extensively within the riparian corridors (Burt, 1938).

Birds include the spectacular Military Macaw (*Ara militaris*), Black-bellied Tree Duck (*Dendrocygna autumnalis*), and Magpie Jay (*Calocitta formosa*). Other colorful species are the Lilac-crowned Parrot (*Amazonia finschi*), Blue-rumped Parrotlet (*Forpus cyanopygius*), Green Parakeet (*Aratinga holochlora*), Coppery-Tailed Trogon, Berylline Hummingbird (*Amazilia beryllina*), Black-chinned Hummingbird (*Archilochus alexandri*), the unique Russet-crowned Motmot (*Momotus mexicanus*), and a host of songbirds and other species more typical of riparian communities to the north (e.g., Gila Woodpecker, *Melanerpes uropygialis*; Van Rossem, 1945).

Reptiles and amphibians of these communities are rich and diversified—73% of the overall fauna of 74 species recorded



**Figure 185.** Sinaloan riparian evergreen woodland of Montezuma Cypress (*Taxodium mucronatum*) on the Río Cuchajaqui, a tributary of the Río Fuerte, near Alamos, Sonora, Mexico. Elevation ca. 760 m.

from near Alamos, Sonora, had northern affinities and the remainder was from the tropics (25%) or endemic to Mexico (2%). Unfortunately, Heringhi (1969), who detailed the herpetofauna, did not provide critical information on habitat relations, but amphibians associated with watercourses certainly include Colorado River Toad, Giant Toad (*Bufo marinus*), a tree-frog (*Pachymedusa dacnicolor*), and Leopard Frog. Turtles, too, are far more common in this area than elsewhere in the Southwest. Mud turtles (*Kinosternon hirtipes* and *K. integrum*, *K. alamosae*), although semi-aquatic, are frequent in streams and arroyos, and larger waters support the pond turtles *Chrysemys picta*, *Pseudemys scripta mayae*, and *Rhinoclemmys pulcherrima*. Snakes directly associated with the water are Boa Constrictor (*Constrictor constrictor*), Watersnake (*Natrix valida*), and Indigo Snake (*Drymarchon corias*); others are associated with streamside trees (Vine Snake, *Oxybelis aeneus*), with fine soils on stream terraces (Blackhead Snake, *Tantilla planiceps yaquiae*), or are attracted to mesic habitats.

Creeks and rivers of the southern Río Yaqui drainage at lower elevations, and the Río Mayo to the south, support tropical fishes capable of dispersing through brackish water, e.g., Pacific Shad (*Dorosoma smithi*), topminnow (*Poeciliopsis prolifica*), and the all-female *P. monacha-occidentalis* that depends on sperm of bisexual species of *Poeciliopsis* for its unique forms of reproduction (gynogenesis and "hybridogenesis"; Schultz, 1977), and, where pools are present, Sinaloan Cichlid (*Cichlasoma beani*). Forms such as Mexican Stoneroller, Longfin Dace, and in the Río Yaqui proper, Beautiful Shiner, Yaqui Sucker, Yaqui Catfish (*Ictalurus pricei*), and Roundtail Chub, all enter this tropical zone, which approaches to southern limits of natural range for most of these northern genera on the west coast of Mexico (Meek, 1904; Miller, 1959; Stuart, 1964). Marine fishes penetrate these lowland rivers far above tidal influence. A goby (*Awaous transandeanus*) has been taken near Movas and almost to Presa Novillo on the Río Yaqui, and Mountain



**Figure 186.** Rio Chico near the town of Rio Chico, Sonora, Mexico. Cottonwood (*Populus monticola*), willow (*Salix* spp.), wild fig (*Ficus* spp.) and thornscrub (*Acacia* spp.) as a mixed riparian community along the boulder-bottomed stream. Elevation ca. 200 m; photograph by Dean A. Hendrickson, June 1978.

Mullet (*Agonostomus monticola*) also has such capability (Hendrickson et al., 1981). Introduced species such as Largemouth Bass, White Crappie (*Pomoxis annularis*), Bluegill (*Lepomis macrochirus*) and Redear Sunfish (*L. microlophus*)

are generally restricted to reservoirs, but the stream-adapted Carp (*Cyprinus carpio*), River Carpsucker (*Carpodes carpio*), and Green Sunfish (*Lepomis cyanellus*) have invaded and become established in local creeks and rivers.