Sonoran Interior Strands

Stream channels and other interior strands of tropic Sinaloan and sub-tropic Sonoran zones are typically occupied by open stands of scrub (e.g., *Baccharis salicifolia*), shrubs (e.g., Tree Tobacco, *Nicotiana glauca*), and weeds (Careless Weed (*Amaranthus palmeri*), Thorn Apple (*Datura* spp.), nightshade (*Solanum* spp.), sunflower (*Helianthus* spp.), and dock (*Rumex* spp.)). Wetter sites have a correspondingly greater herbaceous cover and may present a dense stand of annuals, particularly Cocklebur (*Xanthium strumarium*), Rabbit's Foot Grass (*Polypogon monspeliensis*), and diverse composites. Other less-watered basins and channels, or those subject to frequent scours, may be populated only by algae or only very early successional species. As is the case with strands everywhere, the substrate may be of mud, sand, rock, or rubble (Figs. 143, 194, 195).

Plant-animal relationships within these linear and basin communities remain largely unstudied and therefore are poorly known. Smaller desert streams often meander in aggraded, braided channels through sandy beds where change is constant (Figs. 143, 147). Over a period of a year, fluctuations in water levels are pronounced, so that aquatic and semi-aquatic animals may simply survive in periods of drought in greatly reduced, permanent segments, and fulfill their principal biological function of reproduction in winter months of higher flow or after spates produced by summer rains. The concept of strands, therefore, may be applied even to some fishes that have become adapted to such extremes, e.g., Longfin Dace and Sonoran Topminnow. The remarkable Longfin Dace has been recorded to survive partial desiccation beneath mats of algae when evaporation lowered stream levels (Minckley and Barber, 1971), and the livebearing topminnows have a similarly remarkable tenacity of life, persisting in drying pools at high temperatures and in foul conditions. Survival of a single female topminnow may insure population of an area as a single insemination may be used for consecutive broods. Numbers of embryos appear food related so that in an expanded habitat following rainfall, a female may produce many young and employ superfetation to increase her reproductive rate (Schoenherr, 1977). Growth rates of both these "desert-adapted" fishes is rapid, and reproductive individuals can appear in a few weeks.

Other stream animals (e.g., aquatic insects) have recently been demonstrated to have remarkably short life cycles, so that vagaries of the environment are circumvented by aerial life-history stages at all times of year. Death from desiccation in isolated channels or by flash flood is balanced by continuous reproduction and development from egg to adult in as few as 7 days (Gray, 1980). Perhaps, as suggested by Gray, this remarkably high turnover coupled with very high rates of production in desert streams (Busch and Fisher, 1981) aids in explaining high densities of insectivorous birds (and bats) along their courses. Expansion of research on water-land interactions in strands should provide information far out of proportion to their physical size and apparent importance in southwestern arid zones.

Figure 194. *Riparian strand within the Sonoran Desert on the Salt River, Gila County, Arizona. Desiccated algae on rock rubble habitat occupies the more frequently inundated channel of the stream; sand substratum of the periodically flooded plain supports an open population of Saltcedar* (**Tamarix chinensis**). *Elevation ca. 750 m.*

Figure 195. *The almost unvegetated strand of Laguna Salada, Baja California del Norte, Mexico. Inundated infrequently, these playa habitats were nonetheless wetlands and should be considered as such. This "dry lake" is now being filled with return water from agricultural drains through the Rio Hardy—in effect a managed repetition of the Salton Sea experience in the United States. Elevation ca. −3 m.*