

could be conducted regardless of upstream occurrence of non-indigenous fishes.

Virgin River:

Attempts to eradicate the red shiner from the Virgin River basin, particularly from the Washington Fields diversion downstream to the Mesquite diversion, have been conducted in the past. Though these attempts were not 100% effective, they were successful at eliminating red shiners between Washington Fields and Johnson diversions. These attempts included construction of fish barriers and chemical treatments with the pesticide rotenone.

Chemical procedures to eradicate red shiners will be implemented in 1995 and followed up by subsequent treatments as needed. General chemical treatment methodology will involve 1) approximately 20 drip stations where rotenone will be introduced into the river, 2) spraying Noxfish in standing water areas along stream channels, 3) detoxifying the rotenone in the Virgin River with potassium permanganate. Temporary fish barriers will be constructed in Utah at strategic sites in 1995 to prevent upstream migration of red shiners. These barriers will also assist in dividing the chemical treatments into manageable treatment areas.

Maintain Genetic Viability

Protocols for introduction, re-introduction, and sub-basin transfer of Virgin spinedace will be established and utilized.

Population and Habitat Monitoring

Virgin spinedace population and habitat monitoring will be implemented. Information obtained from the monitoring process will be used to determine if current management actions are attaining the objectives set forth in the Conservation Agreement. In addition, a general assessment of the overall response of other species occurring in the Virgin River basin will be conducted.

Population and habitat monitoring will be implemented cooperatively by participating Virgin Spinedace Conservation Team (VSCT) personnel. VSCT responsibilities regarding monitoring actions are described in Table 3 of the accompanying Conservation Agreement. Protocols for monitoring will be similar to those established by the Virgin River Recovery Team. A general overview of the methodology is presented below.

Monitoring Plan Methodology

A minimum of 10 stations will be chosen as monitoring points throughout the basin. Once re-establishment procedures have been completed, the number of stations established may increase to include the new areas. Sampling will be conducted annually in