

**HUMPBACK CHUB**  
(Preliminary Summary)

Downlist Criteria	Delist Criteria
Demographics	
<p><b>Upper Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Each of the five self-sustaining populations is maintained over a 5-year period, such that:               <ol style="list-style-type: none"> <li>1. each adult (age 4+) population point estimate is not significantly less than the first estimate acceptable to the Service, and</li> <li>2. the trend in adult population point estimates does not decline significantly, and</li> <li>3. mean estimated recruitment of age-3 fish to adult population equals or exceeds adult mortality.</li> </ol> </li> <li>• One core population is maintained over a 5-year period, such that each population point estimate exceeds 2,100 adults.</li> </ul> <p><b>Lower Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• The Grand Canyon population maintained as a core over a 5-year period, such that:               <ol style="list-style-type: none"> <li>1. each population point estimate exceeds 2,100 adults, and</li> <li>2. each adult population point estimate is not significantly less than the first estimate acceptable to the Service, and</li> <li>3. the trend in adult population point estimates does not decline significantly, and</li> <li>4. mean estimated recruitment of age-3 fish to adult population equals or exceeds adult mortality.</li> </ol> </li> </ul>	<p><b>Upper Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Each of the five self-sustaining populations is maintained over a 3-year period beyond downlisting such that for each:               <ol style="list-style-type: none"> <li>1. each adult population point estimate is not significantly less than the first estimate acceptable to the Service, and</li> <li>2. the trend in adult population point estimates does not decline significantly, and</li> <li>3. mean estimated recruitment of age-3 fish to adult population equals or exceeds adult mortality.</li> </ol> </li> <li>• Two core populations are maintained over a 3-year period beyond downlisting, such that for each:               <ol style="list-style-type: none"> <li>1. each population point estimate exceeds 2,100 adults, and</li> <li>2. the trend in adult population point estimates does not decline significantly, and</li> <li>3. mean estimated recruitment of age-3 fish to adult population equals or exceeds adult mortality.</li> </ol> </li> </ul> <p><b>Lower Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• One core population is maintained over a 3-year period beyond downlisting, such that:               <ol style="list-style-type: none"> <li>1. the population estimate exceeds 2,100 adults, and</li> <li>2. the trend in adult population point estimates does not decline significantly, and</li> <li>3. mean estimated recruitment of age-3 fish to adult population equals or exceeds adult mortality.</li> </ol> </li> </ul>
Recovery Factor Criteria to Address Threats Associated with Listing Factors	
<p><b>Upper Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Flow regimes to benefit populations are identified, implemented, evaluated, and revised.</li> <li>• Overutilization is reevaluated and, if necessary, actions are identified to ensure adequate protection.</li> <li>• Effects of diseases and parasites populations are reevaluated and, if necessary, actions are identified to ensure adequate protection.</li> <li>• Procedures are developed, implemented, evaluated, and revised for stocking nonnative fish species.</li> <li>• Channel catfish control programs are developed and implemented to identify the required levels of control in Yampa Canyon and Desolation/Gray Canyons.</li> </ul>	<p><b>Upper Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Flow regimes provided that are necessary to restore and maintain required habitats and sufficient range for all life stages to support recovered populations.</li> <li>• Adequate protection from overutilization is attained.</li> <li>• Adequate protection from deleterious diseases and parasites is attained.</li> <li>• Nonnative fish stocking procedures are finalized and implemented.</li> <li>• Identified levels of channel catfish control are attained in Yampa Canyon and Desolation/Gray Canyons.</li> </ul>

Downlist Criteria	Delist Criteria
Recovery Factor Criteria to Address Threats Associated with Listing Factors (Continued)	
<p><b>Upper Colorado River Basin Recovery Unit (Continued)</b></p> <ul style="list-style-type: none"> <li>• Mechanisms are determined for legal protection of adequate flows.</li> <li>• Elements of conservation plans are identified.</li> <li>• State and Federal hazardous-materials spills emergency-response plans are reviewed and modified.</li> <li>• Measures are identified to minimize the risk of hazardous-materials spills in Black Rocks and Westwater Canyon from transport of materials along the adjacent railway.</li> <li>• Locations of all petroleum-product pipelines within the 100-year floodplain of critical habitat are identified and the need for emergency shut-off valves is assessed.</li> </ul> <p><b>Lower Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Operations of Glen Canyon Dam are continued to benefit humpback chub in the Colorado River through Grand Canyon.</li> <li>• Flow regime to benefit the Little Colorado River population is identified, implemented, evaluated, and revised.</li> <li>• Investigations are initiated on the feasibility of a temperature control device for Glen Canyon Dam.</li> <li>• Overutilization is reevaluated and, if necessary, actions are identified to ensure adequate protection</li> <li>• Asian tapeworm control program is developed and implemented in the Little Colorado River to identify the required levels of control.</li> <li>• Procedures are developed, implemented, evaluated, and revised for stocking and to minimize escapement of nonnative fish species.</li> <li>• Rainbow trout, channel catfish, black bullhead, and common carp control programs are developed and implemented to identify the required levels of control in the Little Colorado River.</li> <li>• Brown trout and rainbow trout control programs are developed and implemented to identify the required levels of control in the Colorado River through Grand Canyon.</li> <li>• Mechanisms are determined for legal protection of adequate flows in the Little Colorado River.</li> <li>• Elements of conservation plans are identified.</li> <li>• State and Federal hazardous-materials spills emergency-response plans are reviewed and modified.</li> <li>• Measures are identified to minimize the risk of hazardous-materials spills from transport of materials along U.S. Highway 89 at and near the two Cameron bridges spanning the Little Colorado River.</li> </ul>	<p><b>Upper Colorado River Basin Recovery Unit (Continued)</b></p> <ul style="list-style-type: none"> <li>• Flows necessary to restore and maintain required habitats and sufficient range for all life stages to support recovered populations are legally protected.</li> <li>• Conservation plans are developed and implemented, and agreements among Federal agencies, State agencies, and other interested parties are executed.</li> <li>• Flow regimes are provided that are necessary to restore and maintain required habitats for all life stages and which would potentially restore or maintain habitat partitioning among <i>Gila</i> species, thereby potentially reducing the risk of increased hybridization.</li> <li>• State and Federal hazardous-materials spills emergency-response plans are finalized and implemented.</li> <li>• Measures are finalized and implemented to minimize the risk of hazardous-materials spills in Black Rocks and Westwater Canyon from transport of materials along the adjacent railway.</li> <li>• Emergency shut-off valves are installed on all problematic petroleum-product pipelines within the 100-year floodplain of critical habitat.</li> </ul> <p><b>Lower Colorado River Basin Recovery Unit</b></p> <ul style="list-style-type: none"> <li>• Operations of Glen Canyon Dam are continued to benefit humpback chub in the Colorado River through Grand Canyon.</li> <li>• Flow regime maintained that is necessary to provide required habitats and sufficient range for all life stages to support a recovered population in the Little Colorado River.</li> <li>• Temperature control device for Glen Canyon Dam is implemented, if determined feasible and necessary for recovery.</li> <li>• Adequate protection of humpback chub populations from overutilization is attained.</li> <li>• Identified levels of Asian tapeworm control are attained in the Little Colorado River.</li> <li>• Nonnative fish stocking procedures are finalized and implemented.</li> <li>• Identified levels of rainbow trout, channel catfish, black bullhead, and common carp control are attained in the Little Colorado River.</li> <li>• Identified levels of brown trout and rainbow trout control are attained in the Colorado River through Grand Canyon.</li> <li>• Flows necessary to restore and maintain required habitats and sufficient range for all life stages to support a recovered population in the Little Colorado River are legally protected.</li> <li>• Conservation plans are developed and implemented, and agreements among Federal agencies, State agencies, and other interested parties are executed.</li> <li>• State and Federal hazardous-materials spills emergency-response plans are finalized and implemented.</li> <li>• Measures are finalized and implemented to minimize the risk of hazardous-materials spills from transport of materials along U.S. Highway 89 at and near the two Cameron bridges spanning the Little Colorado River.</li> </ul>