Indicator • Shad - *Alosa sapidissima*

Indicator Description

The American shad is the largest North American member of the herring family. The shad is an anadromous fish that migrates each spring to the Delaware Estuary watershed to spawn. Between 1880 and 1890 fishermen in the Delaware River caught 10 to 20 million pounds of shad annually. Around 1910, shad numbers began to decline rapidly, and populations were so low by 1920 that shad fisheries were no long a viable industry. Overfishing, dammed spawning tributaries, and degraded water quality, such as low dissolved oxygen levels, were the principal factors in the shad's decline. As a once abundant fish that travels between tidal and non-tidal areas of the watershed (Fig. 3.15), shad represent a valuable indicator of environmental conditions in the Delaware Estuary and Basin.

Desired Condition

Water quality and habitat conditions to support healthy and diverse finfish populations (BP 1.2, 2.3; CCMP Action H5).

Status

Fair: Stable since improvements in dissolved oxygen and tributary fish passage, but recent reductions evident.

Today, the Delaware River supports a viable commercial and shad sport fishery, but harvests are small compared to historic benchmarks. In 1896 over 14 million pounds of shad were caught, having a value of $10 million in 2006. Although current populations cannot sustain that level of harvest, the economic value of today's recreational fishery is nearing levels reported more than 100 years ago. In 1996, for example, the economic value of the shad sport fishery in the Delaware was estimated at $3.2 million.

Trends

Once blocked by a lack of oxygen, shad now move more freely through the tidal freshwater zone during spawning runs. Sewage facility upgrades improved water quality and increased dissolved oxygen, which helped shad return to the Delaware. Still, shad abundance is low, even compared with numbers from the 1990s. Pennsylvania leads the nation in removing obsolete dams, and fish ladders are being installed in many areas of the basin. These efforts have reopened approximately 165 stream miles for shad migration.

Actions and Needs

Increases in the shad population in the Delaware Basin should continue if water quality and fish passage are continually maintained or improved (e.g., by removing dams and installing fish ladders). Habitat conditions in spawning reaches of tributaries must also be maintained and monitored.

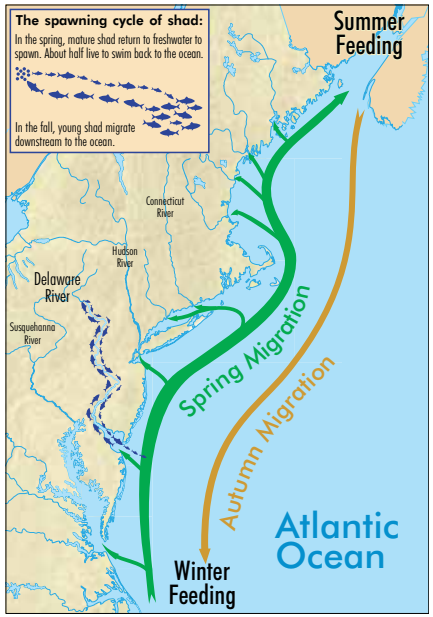

Fig. 3.14. Shad Migration Routes