



The Aquatic Ecosystem

A healthy Nitrogen Cycle produces Clean Water

WASHINGTON'S SKAGIT COUNTY IS PHYSICALLY DEFINED BY WATER - STREAMS, RIVERS, LAKES, AND ESTUARIES FLOW TO THE SOUND. KEEPING A SMALL POND HEALTHY IS A STEPPING STONE TO KEEPING ALL OF OUR WATERS HEALTHY.

WATER PROBLEMS

CLARITY – EROSION, CHEMICALS/FERTILIZERS, AND ANIMAL WASTE ADVERSELY AFFECT WATER QUALITY. GRASSES AND PLANTS ALONG THE SHORELINE ARE HIGHLY EFFECTIVE AT REDUCING SEDIMENTS AND NUTRIENTS BEFORE THEY ENTER THE WATER.

ALGAE BLOOMS – NITRATE AND PHOSPHATE ARE GENERALLY GOOD FOR PLANTS, BUT TOO MUCH CAN RESULT IN SUMMER ALGAE BLOOMS. ALGAE IS A SIMPLE PLANT (LACKING ROOTS, STEMS, AND LEAVES). PLANTS PRODUCE OXYGEN DURING THE DAY BY PHOTOSYNTHESIS. AT NIGHT, PLANTS USE OXYGEN, AND LARGE GROWTHS OF ALGAE CAN USE UP ALL THE OXYGEN KILLING AQUATIC LIFE. TO COMPLICATE THE PROBLEM, WARM WATER HOLDS LESS OXYGEN THAN COLD WATER.

IN THIS SMALL POND, THE WATERFALL FILTER AND BUBBLER INCREASE OXYGEN LEVELS AERATING THE WATER. SUBMERGED AND SURFACE PLANTS ALSO PRODUCE OXYGEN AND ABSORB NUTRIENTS. SURFACE PLANTS CAN STEAL SUNLIGHT FROM ALGAE THEREBY SLOWING THEIR GROWTH. SURFACE AND SUBSURFACE PLANTS COMPETE WITH ALGAE TO ABSORB NUTRIENTS.

FERTILIZER AND ANIMAL WASTE FROM RUN OFF ADD EXCESS PHOSPHATE, NITRATE, AND AMMONIA ENTER THE WATER

DEAD PLANT MATERIAL AND FISH WASTE

DECOMPOSITION OF DEAD PLANT MATERIAL PRODUCES AMMONIA WHICH IS POISONOUS TO FISH

NITRIFYING BACTERIA (NITROSOMONAS) CONVERT OXYGEN AND AMMONIA TO PRODUCE NITRITE WHICH IS ALSO POISONOUS TO FISH

NITRIFYING BACTERIA (NITROBACTER) CONVERT NITRITE INTO NITRATE

NITRATE AND PHOSPHATE ARE NUTRIENTS FOR PLANTS

PLANTS PRODUCE FOOD AND OXYGEN THAT FISH NEED. PLANTS ALSO PROVIDE A BREEDING GROUND FOR FISH AND INSECTS.



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