



Motutapu Dam Algae Treatment

In autumn 2011, the “Duck Pond” on Motutapu Island was fenced off preventing livestock access. The dam was in a highly degraded state with poor water quality. The dam is located within the West Point catchment which contains a small stream that has proven to be the



Motutapu Island, located northeast of the city of Auckland, New Zealand.

second most productive in terms of freshwater fish diversity and abundance on the island. As a consequence, the margins of the dam will be planted out and the stream has recently been fenced off (December 2011) with the hope of restoring this freshwater ecosystem and improving the water quality that flows in to the Hauraki Gulf Maritime Park.

Following the retirement of grazing, the dam had an outbreak of algae that almost completely covered the dam. As a consequence, it was decided to “treat” the pond. Following some research and seeking advice it was decided to trial a product called *StartSmart / EcoSocks Combo Pack*.

StartSmart, a liquid, multi-purpose biological pond additive, is super-concentrated, with a mix of nitrifying and denitrifying bacteria that out-compete algae for N and P nutrients. EcoSocks consist of freeze-dried, sludge-reducing bacteria and food grade nutrients encased in a biodegradable sock. When placed into water, the EcoSock continuously produces sludge-digesting, algae-fighting bacteria for a full one month. After one month, the EcoSock is removed, discarded as yard waste, and replaced with a fresh EcoSock. Together, StartSmart plus EcoSocks make up the ComboPack. The ComboPack is applied once a month according to a standard dose chart.

Dosage Program

The “Duck Pond” is just over 1.5 acres surface area, and varies between 2 to 3 meters depth. During the evaluation period (November 2011 through February 2012) the average depth was 2.4 meters. The standard dose chart called for 16 Litres of StartSmart and 4 EcoSocks per month. Because the pond was considered to be highly eutrophic, with severe algae blooms that covered more than 50% of the surface area of the pond, a double dose was used for the initial application. Subsequent applications were performed at the standard dose rate.

Treatment Dates and Product Quantities

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| ▪ First treatment : | 21/11/2011 | 8 EcoSocks plus 32 L StartSmart |
| ▪ Second treatment: | 21/12/2011 | 4 EcoSocks plus 16 L StartSmart |
| ▪ Third treatment: | 23/1/2012 | 4 EcoSocks plus 16 L StartSmart |
| ▪ Fourth treatment: | 20/2/2012 | 4 EcoSocks plus 16 L StartSmart |

Results

The photos below show the progression of treatment from the beginning of the application, with the severe algae bloom quickly disappearing. To properly appreciate the changes vs time, the Auckland area seasonal temperature profile should be considered. At the onset of the treatment program, the weather was cool, and the temperature climbed as the trial progressed through the New Zealand summer. During Sept, Oct, and Nov, the average Auckland high temperature is 18 C. During Dec, Jan, and Feb, the average Auckland high temperature is 24 C.

Department of Conservation | Te Papa Atawhai authorities note that the “Duck Pond” water quality historically degrades from November through February as UV and temperature increase. The expected trend during the treatment months would be a worsening of the algae problem, rather than improvement. However, as seen in the photos below, the dam showed rapid, dramatic, and sustained improvement with use of the StartSmart / EcoSock ComboPacks:



Nov 21, Day of initial ComboPack Dose



Dec 21, 30 days after first ComboPack Dose



Jan 23, after 2 months of treatment



Feb 20, after three months of treatment

Conclusions

Department of Conservation | Te Papa Atawhai authorities conclude that StartSmart / EcoSock ComboPacks have successfully restored the “Duck Pond” to outstanding water quality. There is now zero floating algae, the water clarity is outstanding, and all foul odours have been eliminated. Wildlife in and around the dam is more robust, plentiful and diverse than in recent memory. We are thankful for StartSmart / EcoSock ComboPacks, which have proven to be a natural, non-toxic, easy to use, and extremely effective means of improving water quality.