

The overall objective of the project is to reduce the amount of eutrophication in the sea through large-scale cultivation and harvest of the ascidian *Ciona Intestinalis*. The harvested biomass will be used for biogas production and as organic fertilizer. The project aims to assess the ecological impact from the large-scale ascidia cultivation with ecological studies around the culture, both on the bottom as well as the free water mass. The project is managed by Lysekil municipality.

Objective	Result
Impact studies carried out on existing blue-mussel cultures over-grown with <i>Ciona Intestinalis</i> .	Was conducted. See this report.
Surveys under and close to the culture. Methods for the assessment of environmental impact and environmental status include the Norwegian standard method for environmental impacts in fish farming (NS 9410: 2007), as well as other scientifically accepted methods.	Cultures of ascidia affects the local ground negative in the same way as is reported from mussel farms. Similarly, the negative impact is very local and temporary, and the bottom is recovered when the farm is removed. Six months after removal of the culture the bottom environment was classified as very good.
The dispersal of larvae was studied during spring 2011 and onwards during the project at existing ascidia cultures.	The work was done in collaboration with mussel farmers to reduce the amount of unwanted ascidia.
Larvae dispersal from an ascidia culture. Based on literature data ( <i>Ciona</i> is as well studied animal) a dispersal model is created based on how far a water package can be transported during the larvae with time (maximum of 1-2 days). The objective is to provide an estimation of the possible security zone and distances between ascidia and mussel farming sites which can be used in a management perspective.	A report regarding the larva spread and proposal for safety distances between ascidia and mussel farms has been produced. The report proposes 5 km as the safety distance of the worst-case scenario. But shorter distances (1-2 km) can be justified if local conditions allows.
Effects of cultures on pelagic environment The hypothesis predicts that particulate nitrogen and phosphorus will decrease when ascidia filter the water and dissolved nitrogen concentration will increase. Further the secchi-depth will increase and there will be a shift in plankton community structure.	The results showed that levels of ammonium increase inside the farm but the increase could not be detected 20 meters away. Secchi-depth increased significantly (~ 1 m) adjacent to the farm. Some zooplankton groups decreased in abundance during passage but this was compensated by increase in other zooplankton groups. <i>Ciona</i> larvae and eggs were found only inside the farm.
Effects on fish abundance; Can an ascidia culture serve as protection for fish? Studies by video analysis and net fishing.	The study was carried out and gives a weak support for the hypothesis.
A combined environmental impact assessment. Carried out by external experts with proven experience from similar reviews.	Was conducted. See report.