

Algae filters.

Using light to make nuisance algae work for you.

By Bob the (reef) builder, aka Rob Holness.



What is an algae filter?

- Filter designed to grow algae -fast enough to remove unwanted nutrients from the tank.
 - Comprises
 - Screen.
 - fast flowing water.
 - Strong light.
 - Algae grows so fast that it outcompetes nuisance algae in the tank.
 - Removes Phosphates and Nitrates to extremely low levels.
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Benefits

- Natural Removal that increases oxygen and redox levels in water.
 - Cheaper than skimmers, smaller than other equip.
 - No additives, phosphate removers etc.
 - Removes Inorganic Materials (chemical PO₄ and NO₃, also toxic chemicals?). Leaves Organics for food.
 - Takes PO₄ and NO₃ to extremely low levels, great for colour in SPS and all corals.
 - Very interesting possibilities for keeping of non-photosynthetic corals and inverts, if elimination of skimmer is possible.
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Simple to make



- Powerful light.
- Close to screen.
- Steady flow of tank water.



Sun Frame



- No lights (less electricity)
- Very good at cooling(problem in winter?) (could cover it)
- Must have back-up power for pump.

Inorganic vs Organic Nitrates and Phosphates

- When a mineral is nutritionally inorganic, it means that it is without any organic (carbon-based) molecule. When a mineral is nutritionally organic, it means that it is chelated or bound to organic molecules. (Jensen, pp. 74-84).
- There is much controversy in the scientific community as to whether or not the body can utilize inorganic minerals in carrying out life processes. However, the vast majority of the scientific community recognizes that **ONLY** chemically and nutritionally organic food can adequately provide substances, including minerals, that can be utilized at the cellular level (pp. 140-145).

Remember, it is only the plant kingdom, *(and some bacteria)* through its various living and developing processes, that can attach enzymes to inorganic substances and make them chemically bonded, active and organic.

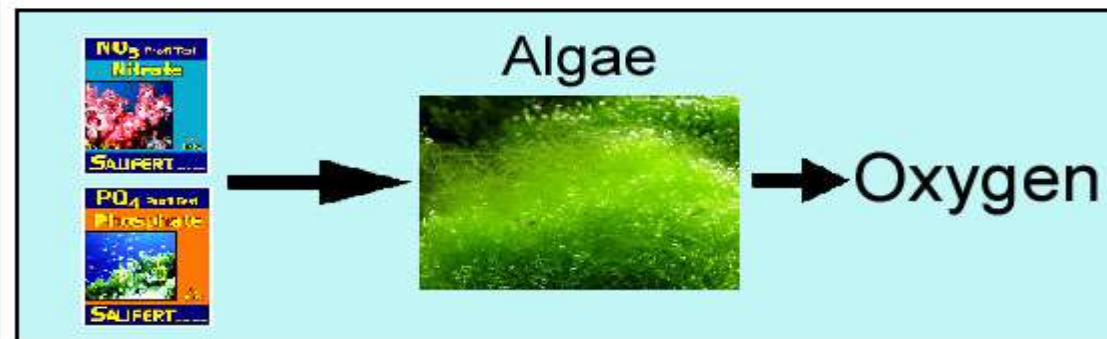
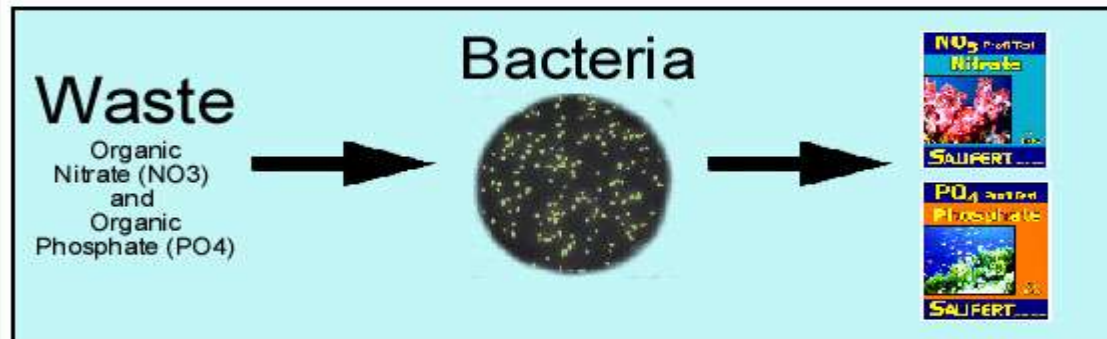
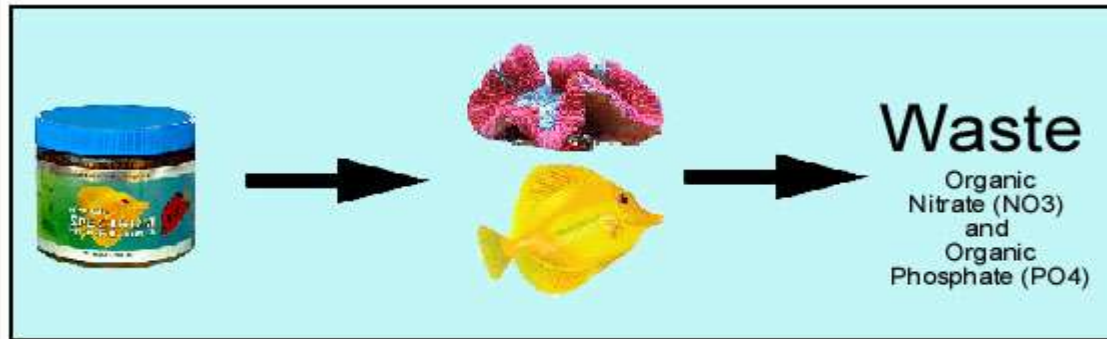
- The plant kingdom utilizes sunshine, carbon dioxide, nitrogen, *(phosphorus)*, oxygen, water and inorganic minerals in the process of photosynthesis to feed itself and grow. The result is a living plant (food for our consumption) containing: Glucose, protein, fatty acids, minerals, enzymes and vitamins. *(All of these would be considered organic materials).*
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So what does that mean?

- Plants are only able to use inorganic substances to grow. So an algae filter can only take out the bad stuff, (chemicals that encourage nuisance algae and cyano and lower water quality etc.). Takes them so low that your Macro algae, (even Chaeto) will die back.
 - It can't use the organics that are still very useful to our corals.
 - So corals and inverts, still have access to organics as food. (Mucus, amino acids, vitamins etc.)
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Nutrients, part 2

What eats what



Print out for your records :)

Compare to current number one nutrient fighter-The Protein Skimmer.

- Skimmer removes organic matter-which is food for our corals (why LPS and mushrooms often suffer in highly skimmed systems).
 - Skimmer removes plankton and pods and mucus etc. from our systems. (Removing them as food for SPS and heterotrophic (non-photosynthetic) corals).
 - Skimmer cannot remove inorganics (Phosphates and Nitrates).
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Aside

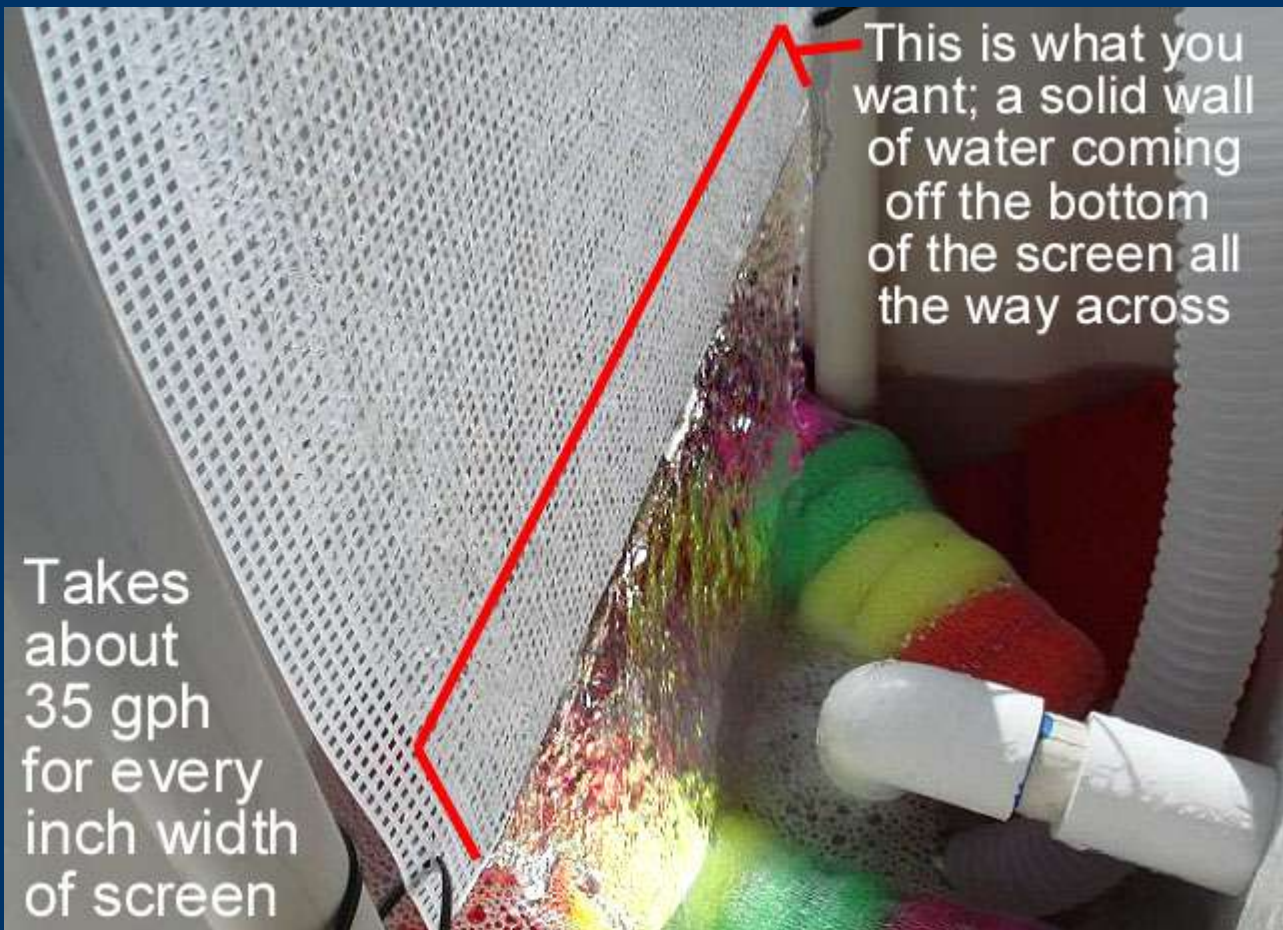
I am not advocating the removal of skimmers.
This is an option however among the more exploratory among
you.

This not so new technique is however offering us options
different from the mainstream.

It has taken my PO₄ down to 0.01ppm on a Hanna test kit.
(Something I have never achieved before trying this. I have tried
ZeoVit, Phospate removers, Vodka, Macro algae).

So it does work, fast.





This is what you want; a solid wall of water coming off the bottom of the screen all the way across

Takes about 35 gph for every inch width of screen



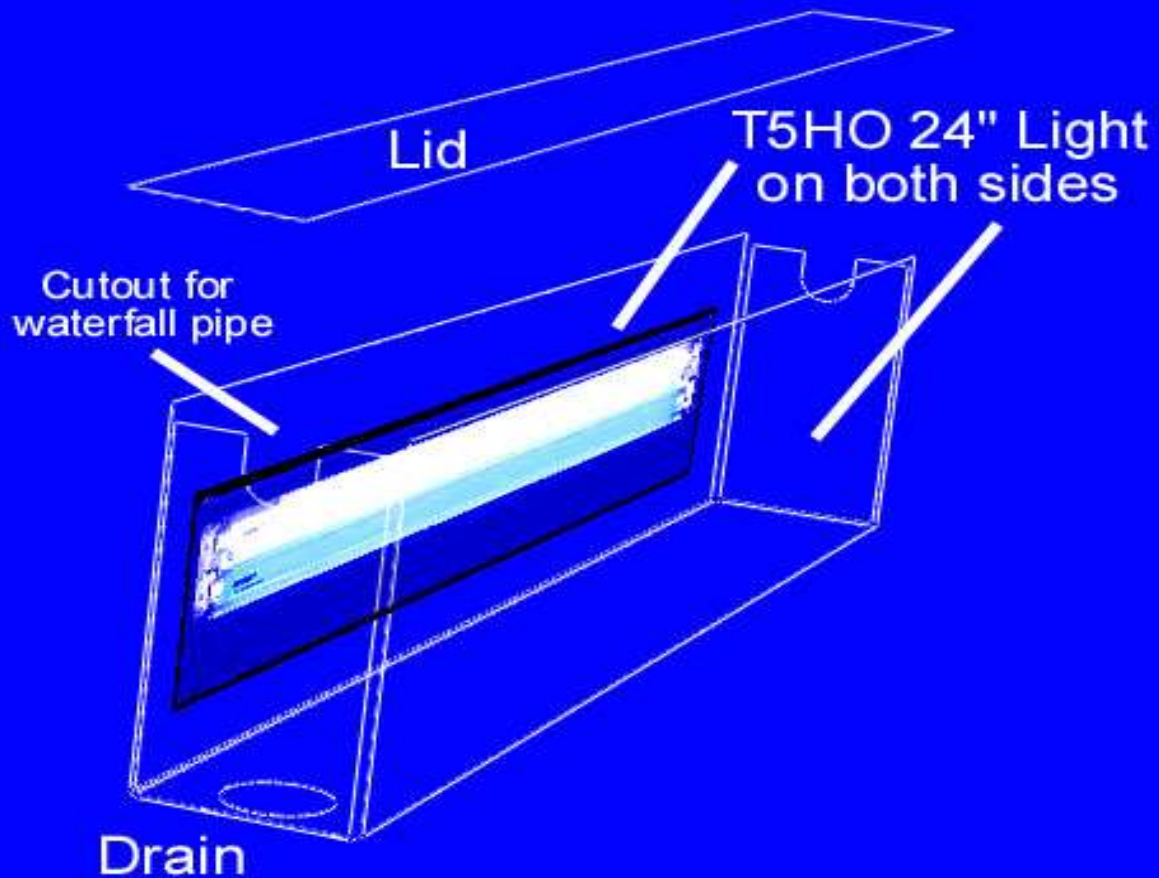
This is too little flow





The "Santa Monica 120"

Low profile, high power, 120 sq in screen.
8000 Lumens 24 long X 6 high X 6 deep





Therefore practical advantages for your tank.

- It becomes truly easy to control inorganic Nitrates and Phosphates at extremely low (reef-like) levels. SPS will colour beautifully.
 - Nuisance algae simply cannot survive at these levels.
 - Livestock that starved before can live in our aquaria, allowing far greater diversity. Sponges, tunicates, Feather stars, Gorgonians (even Ricordia Yuma used to not get enough food in my highly skimmed SPS tank .)
 - Extremely difficult heterotrophs such as Dendronephthia may be able to be kept, opening up many new species to the hobby.
 - We will be able to keep a greater diversity of corals together, as keeping your reef nutrient-poor will not require starving the corals that in the past required slightly less skimmed water.
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Stages of happiness with your algae filter.

1. The day you see the first very light-brown colour on the screen.
2. The day you see the screen covered left to right, top to bottom.
3. The day AFTER you think you saw your N or P test go down. As that is when you tested again to be sure.
4. The day you realized, for sure, that the the piece of filtration equipment you removed last week was really and truly not needed.
5. The day you finally realize that the N and P problems you've been fighting for (weeks, months, years) are finally gone.
5. The day another aquarist asks you, "How did you do it?"

- Santa Monica
