

Meeting Minutes

Oct 14, 2024

Meeting Purpose

Discussion on various reef aquarium topics with Doug Dorett from Frag Farm UK.

Feature Breakdown (List by ##### 1. Feature, ##### 2. Feature...)

1. Alkalinity

Issues

Alkalinity is often misunderstood as a direct measure of coral growth, while it's actually part of a larger buffer system.

Background Context

Alkalinity is comprised of bicarbonate, carbonate, and boric acid, which work together to stabilize the pH in a reef tank.

Current Status

Many reefers try to maintain a flat alkalinity level, believing it to be beneficial for corals.

Challenges, and Blockers

Constantly fluctuating alkalinity can negatively affect the proton pump in corals.

Ideas and Explanations

The bolus method creates a stable alkalinity level by dosing all components at once.

Decisions

Alkalinity should be allowed to fluctuate naturally, and reefers shouldn't strive for a perfectly flat level.

Next Steps

Doug will continue to research and develop the bolus method.

2. Calcium

Issues

Calcium is a better indicator of coral growth than alkalinity.

Background Context

Calcium is directly used in the formation of coral skeletons.

Current Status

Many reefers use Kalkwasser or sodium carbonate to raise calcium levels.

Challenges, and Blockers

Excessive use of Kalkwasser or sodium carbonate can lead to precipitation of calcium carbonate.

Ideas and Explanations

Precipitation can create a favorable environment for nuisance algae.

Decisions

Reefers should be aware of the potential for precipitation and its effects on algae growth.

Next Steps

Doug will continue to study the effects of precipitation on coral health and algae growth.

3. CO2

Issues

CO2 is often considered bad for reef tanks, but it is essential for photosynthesis.

Background Context

Corals require CO2 for photosynthesis, which provides energy for growth.

Current Status

Some reefers use CO2 scrubbers to remove CO2 from their tanks.

Challenges, and Blockers

Removing too much CO2 can hinder photosynthesis and lead to precipitation.

Ideas and Explanations

The bolus method ensures adequate CO2 levels for healthy photosynthesis.

Decisions

CO2 scrubbers should be used with caution and possibly with a bypass to allow for CO2 replenishment.

Next Steps

Doug will continue to develop the bolus method to optimize photosynthesis.

4. Water Changes

Issues

Water changes are often seen as a way to replenish trace elements.

Background Context

Trace elements can be depleted quickly in reef tanks.

Current Status

Many reefers believe water changes can restore trace elements.

Challenges, and Blockers

Salt mixes often don't contain sufficient levels of all trace elements to effectively replenish them with water changes.

Ideas and Explanations

Water changes are more of a reset than a replenishment tool.

Decisions

Trace elements should be dosed separately and before water changes.

Next Steps

Doug recommends testing and adjusting trace elements before water changes.

5. Salinity

Issues

Salinity is often neglected as a vital parameter in reef tanks.

Background Context

Salinity affects the concentration of all other elements in the water.

Current Status

Many reefers don't consistently monitor or adjust salinity.

Challenges, and Blockers

Incorrect salinity can lead to inaccurate readings of other elements and ultimately impact coral health.

Ideas and Explanations

The fora ICP provides an adjusted reading of other elements based on the salinity level.

Decisions

Reefers should make salinity a priority and strive for accuracy in their measurements.

Next Steps

Doug will continue to emphasize the importance of salinity to reefers.

6. Alk Swings

Issues

Alk swings are often blamed for coral deaths, but the cause is usually more complex.

Background Context

ALK swings can occur due to various factors, including overdosing or equipment malfunction.

Current Status

Reefers often associate alk swings with coral health problems.

Challenges, and Blockers

It's difficult to pinpoint the precise cause of coral death, especially in complex reef systems.

Ideas and Explanations

ALK swings may not be the primary cause of coral death, but rather a symptom of another underlying issue.

Decisions

ALK swings themselves may not be detrimental to corals, but rather indicative of a larger problem.

Next Steps

Doug will continue to investigate the causes of coral death and alk swings.

7. Coral Pests

Issues

Coral pests are often seen as aggressive invaders, but they may have a beneficial role.

Background Context

Coral pests can include flatworms, copepods, and other organisms.

Current Status

Reefers often aggressively combat coral pests.

Challenges, and Blockers

It's difficult to completely eliminate pests in a reef tank.

Ideas and Explanations

Pests may serve a role in cleaning up unhealthy tissue and preventing larger outbreaks of disease.

Decisions

Pests may not be solely detrimental to corals, but rather a part of a complex ecosystem.

Next Steps

Doug will continue to research the ecological role of coral pests.

8. ICP-MS vs. ICP-OES

Issues

ICP-MS is often seen as superior to ICP-OES in terms of accuracy.

Background Context

ICP-MS is more precise in measuring certain metals, while ICP-OES is better at measuring other important elements.

Current Status

Some reefers believe ICP-MS provides a more accurate picture of their tank water parameters.

Challenges, and Blockers

ICP-MS is not necessarily more accurate than ICP-OES, and often requires dilution of the sample, which can affect the accuracy of the results.

Ideas and Explanations

A hybrid ICP-MS/OES system could offer the best of both methods.

Decisions

Reefers should use the appropriate testing method for their specific needs.

Next Steps

Fora is developing a hybrid ICP-MS/OES system.

Summary

This podcast episode covers a wide range of reef aquarium topics, focusing on debunking common misconceptions and providing insights into the complexities of maintaining a healthy reef environment.

Incidental Topics

- Doug's recent surgery and recovery
- Fauna Marine sponsorship
- Frag Garage's ICP consulting services
- The benefits of the bolus method for coral health
- The importance of understanding and managing precipitation in reef tanks
- The potential side effects of refugiums
- The significance of salinity in reef tanks
- The relationship between coral pests and overall coral health
- The differences between ICP-MS and ICP-OES and their respective strengths and weaknesses