Best Management Practices (BMPs) for In-Water Hull Cleaning

Objectives

Be able to understand and Explain Non Point Source Pollution

Be Able to Understand and Explain the purpose of Best Management Practices (BMPs) for underwater hull cleaning

Know the do's and don'ts for underwater hull cleaning regarding copper bottom paint

Understand the recommended guidelines of hull Cleaning relating to BMPs

Best Management Practices (BMPs)

- Hull Cleaning BMPs initially formulated by University of California, Sea Grant Program in 1990
- Further Development by the California Professional Divers Association to comply with State and Federal Standards (California's Non Point Source Pollution Control Program)
- Hull Cleaning Categorized as Non Point Source Pollution regulated by the Federal EPA

Why are BMPs used?

- Prevent inadvertent discharge of toxic pollutants including hull paints from entering surface waters. Bottom Paints preservation.
- Keep boating public and hull cleaning community informed of the best available methods and products resulting in a healthier marine environment for all.
- Reduce unnecessary hull wear and increase vessel performance
- Reduce fossil fuel emissions

Factors Affecting BMPs

- Hull Cleaning Frequency
- Type of Hull Coating
- Age of Coating
- Fouling Progression

Types of Paint BMPs

Hard Vinyl

- Very Durable
- Wait 60 to 90 days to clean after application
- Clean monthly or when sufficiently fouled as to prevent abrasive scrubbing with inappropriate pads (soft white pad or carpet is preferable)
- Very common, available throughout California
- High VOCs can dis-bond other paints ***

Types of Paint BMPs

Hard Epoxy

- Very Durable
- Wait 60 to 90 days to clean after application
- Clean monthly or when sufficiently fouled as to prevent abrasive scrubbing with inappropriate pads (soft white pad or carpet is preferable)
- Very common, available throughout California
- Low VOCs, more compatible than Vinyl paints
- Recommend these types of paint products

Types of Paint BMPs

Ablative

- Not Very Durable to hull cleaning
- Smooth Surface
- Clean with carpet or soft pad only
- More suitable for boats that are cruising or are frequently used.

Types of Paint BMPs

Soft Sloughing

- Not Very Durable to hull cleaning
- Clean unpainted/running gear surfaces of vessel
- Paints not recommended for pleasure craft due to boaters use and possible paint damage from hull cleaning

Stern Drives

- Interlux, Trilux (copper derivative)
- Clean with soft pad to prevent paint loss
- Prevent Sharp objects from puncturing stern drive rubber boots
- Keep intakes free of fouling growth

Unpainted drives should be maintained out of the water or will require more frequent cleaning services

Unpainted Hull Surfaces

- Will accumulated fouling growth quickly
- Requires frequent hull cleaning
- Hull cleaning and growth could damage hull surface
- Recommend that owners paint the bottom to prevent hull damage

Biocide Free Coatings

- Few Products Available
- Limited Organized In water Testing
- Growth accumulates faster that with conventional bottom paints
- Requires frequent hull cleaning in Northern California (as frequent as 21 days)
- Eliminates the use of Toxins associated with bottom paints

Old Paint BMP

- Applies mostly to Hard Paints
- Paints Age is a major factor
- Cleaning should be more frequent to prevent paint Loss
- Abrasive scrubbing will cause paint discharge or loss into the water environment
- Do not use stainless steel wool to remove heavy algae stains

Cleaning Cycles and BMPs

- Clean Boats to prevent mature fouling accumulation
- Fouling growth accelerates during summer months in California
- Remove fouling growth before it requires more abrasive scrubbing
- Cleaning Cycles very per region (6 to 10 weeks in Northern California Regions)

Special BMPs

- Use Stainless Steel brushes on Unpainted and Running gear only
- Do not Wet Sand or strip bottom paint underwater
- Dispose of used Zinc products and old tools Properly. Do not drop in the marine harbor.

Type 1 Growth

- Light Silted
- Paints color highly visible
- No Hard or three dimensional growth
- BMP = Boat May be Spot Cleaned

Type 2 Growth

- Light to Moderate silt 100%
- Heavier Fouling on Waterline present
- 3D Growth present on Running gear
- Paint pigment is still visible
- BMP = Vessel should be Hull Cleaned

Type 2 Growth

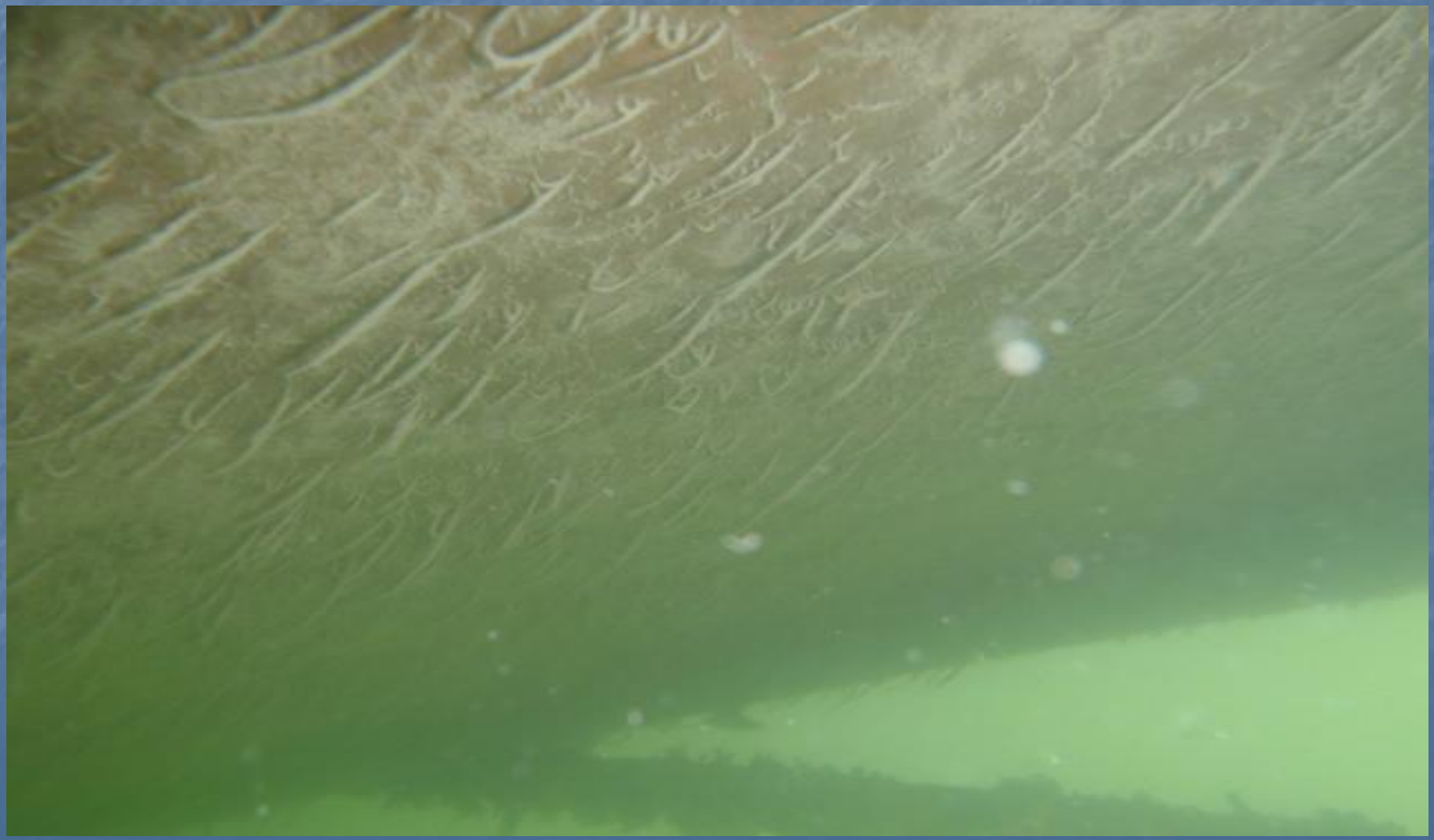
Type 2 Growth

Type 3 Growth

- Moderate to Heavy Silt Fouling
- Paints pigment visibility impeded by silt
- Moderate 3D growth on Running Gear
- Allowing Type 3 fouling to occur hampers Boat Performance
- Vessel must be cleaned using care

Type 3 Growth

Type 3 Growth

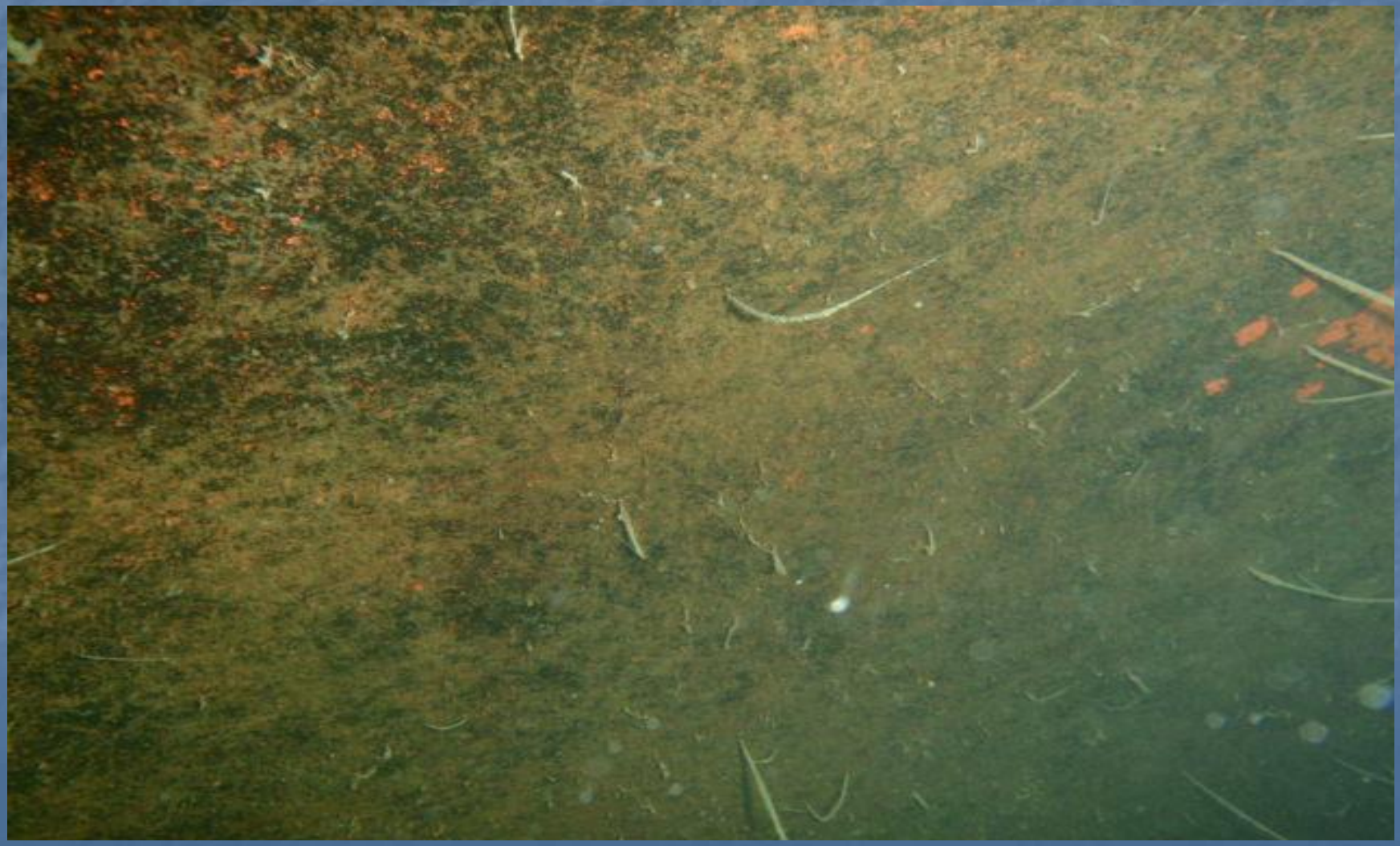


Type 3 Growth

Type 4 Growth

- Heavy fouling Silt Layer on hull
- Paints Pigment may be difficult to determine
- Moderate to Heavy 3D growth Present on Boat and Running Gear
- Cleaning Type 4 growth will result in Paint Loss

Type 4 Growth

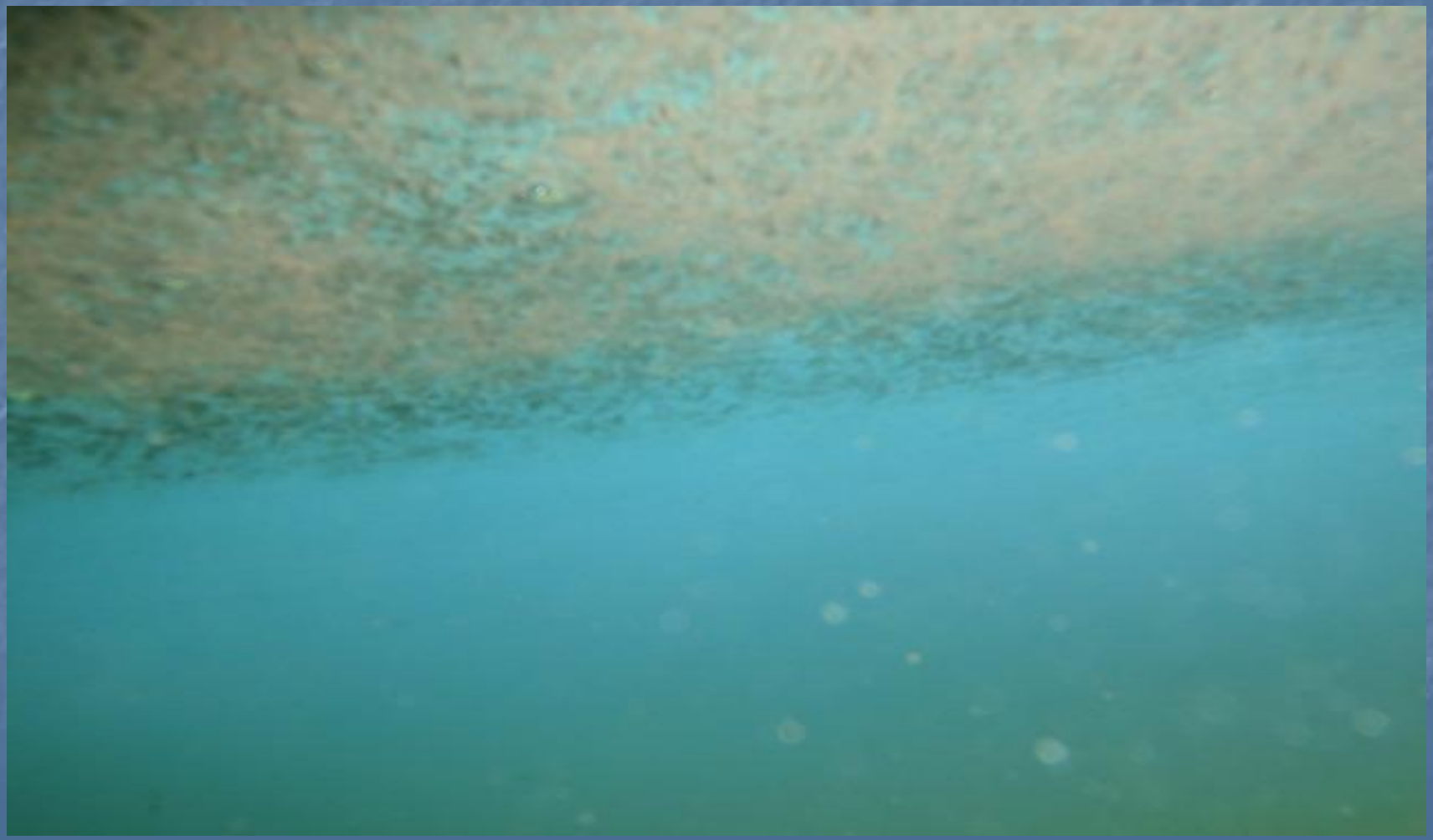


Type 4 Growth

Type 4 Growth

Type 4 Growth

Type 4 Growth



Type 4 Growth

Type 4 Growth

Type 4 Growth

Type 5 Growth

- Heavy Silt Fouling 100% Vessel
- Moderate to Heavy 3D Fouling 100%
- Hull Cleaning will require scrapping
- Paint Loss will occur during hull cleaning in this Growth Stage

Hull Cleaning Questions

1. Give one example of Non-Point Source Pollution.
2. What does BMP stand for?
3. One reason for the development of BMPs is so that the underwater hull cleaner can be in compliance with the California Non-Point Source Pollution Control Program.

   True or False
4. List one objective of underwater Hull Cleaning BMP use
5. Name one kind of paint that should not be cleaned under water
6. Name one kind of anti-fouling paint you should recommend to boat owners because it releases less toxins
7. What is the recommended waiting period before cleaning a boat bottom after the bottom has been painted.
8. Upon replacing zinc anodes the diver should discard the old zinc at the bottom of the marine harbor

   True or False
9. Shooting pressure Washer spray into the raw water intakes on an stern drive will cause the engine to overheat