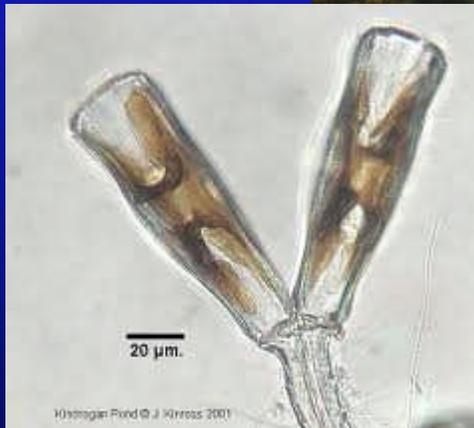
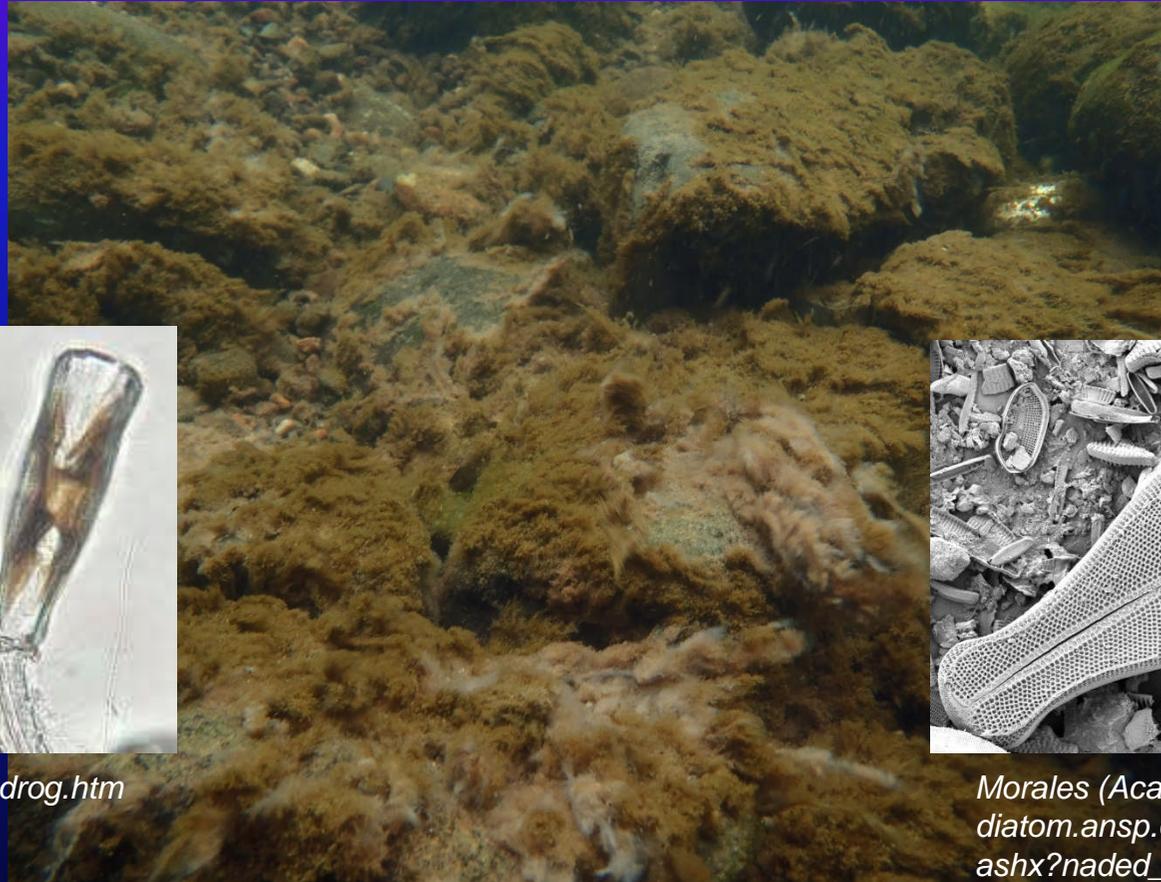
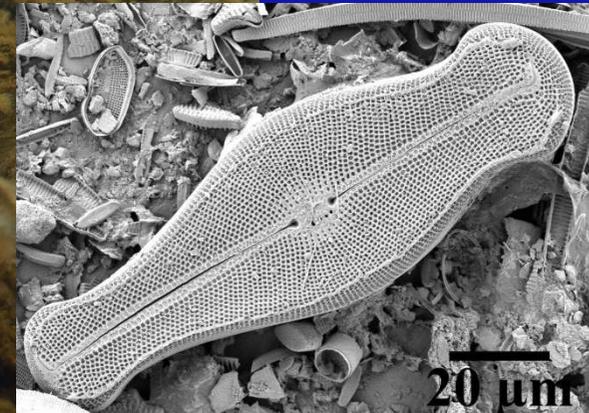


Status Update on 2012 Didymo Bloom in the Delaware River

Didymosphenia geminata



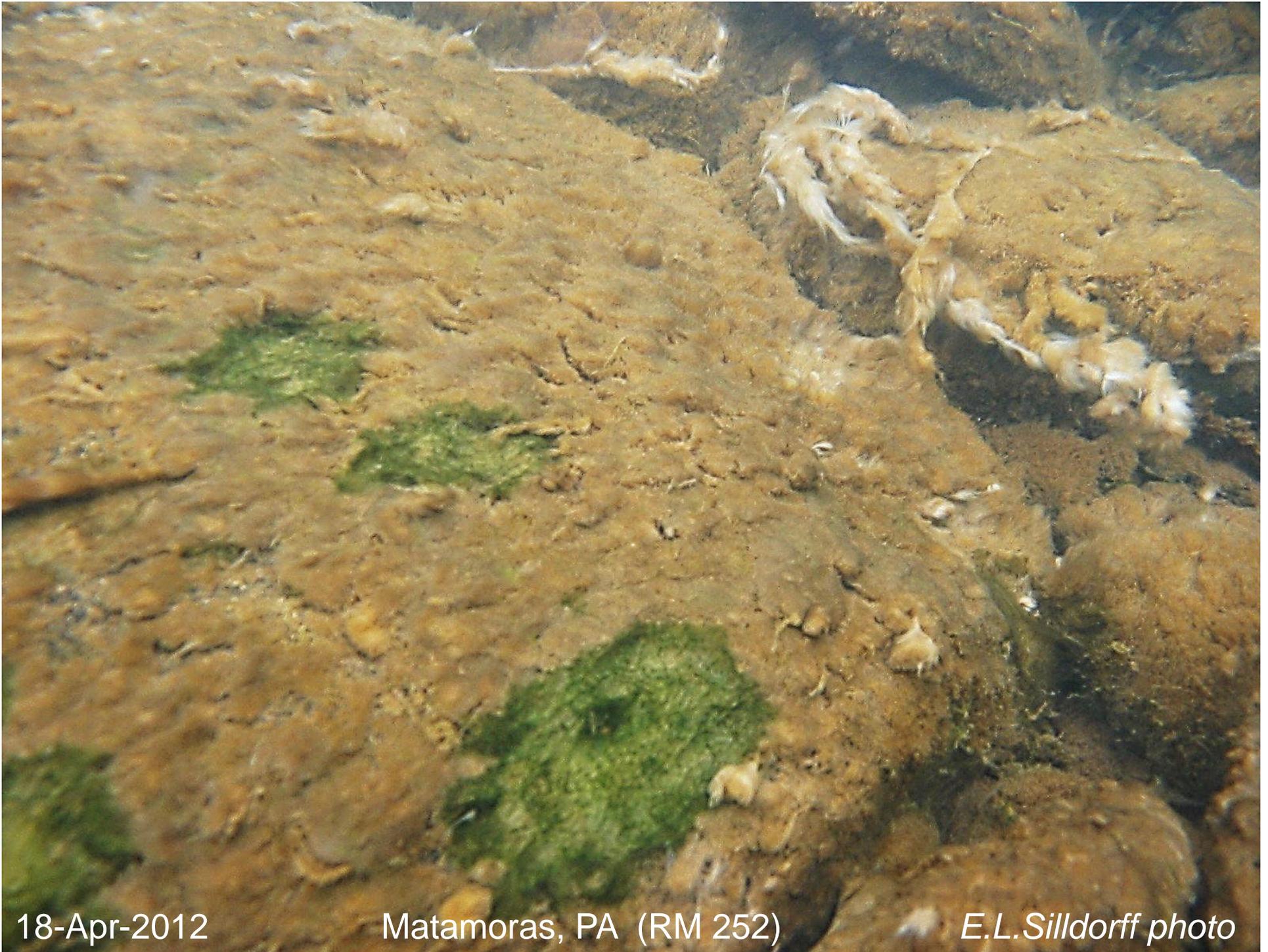
algalweb.net/kindrog.htm



Morales (Academy of Natural Sciences)
diatom.ansp.org/taxaservice/ShowTaxon.aspx?naded_id=81001

Recent History for Didymo in the Delaware Basin

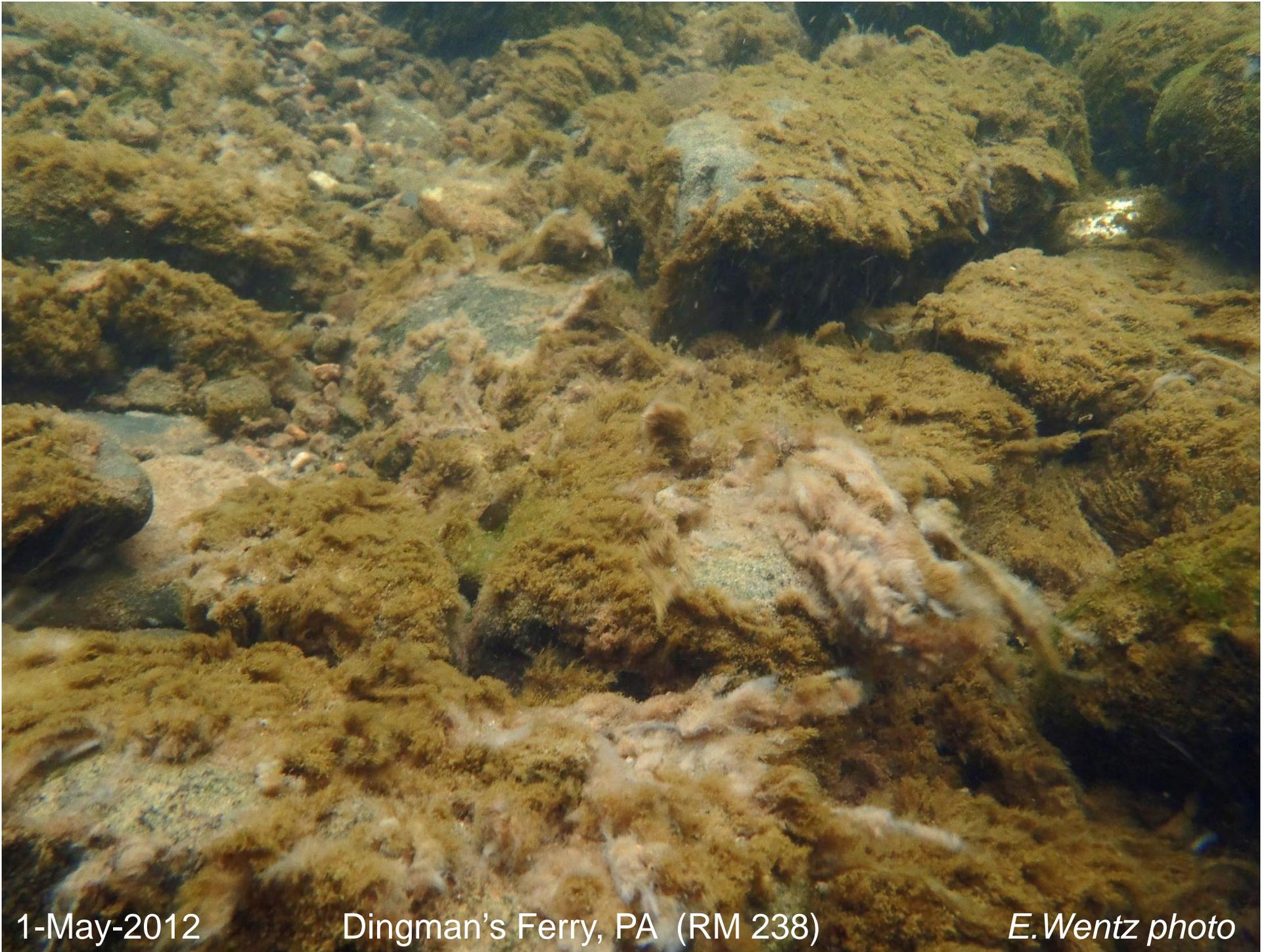
- “Stalked” diatom alga; typically a “clean water” indicator (cold temperatures, low nutrients)
- Independent discoveries in 2007 by ANSP (Dr. Marina Potopova) & NYSDEC, including ***blooms*** in the E Br Delaware River below Pepacton Reservoir
- Many discoveries in 2007 throughout the Northeast
- Present in DRBC algal samples from 2007, 2008, 2009 at very low density in the mainstem Delaware River
- Clearly an “invasive species” but uncertain whether present historically in the Delaware Basin (complex story)
- **2012: *Blooms*** throughout mainstem Delaware River (April-May)



18-Apr-2012

Matamoras, PA (RM 252)

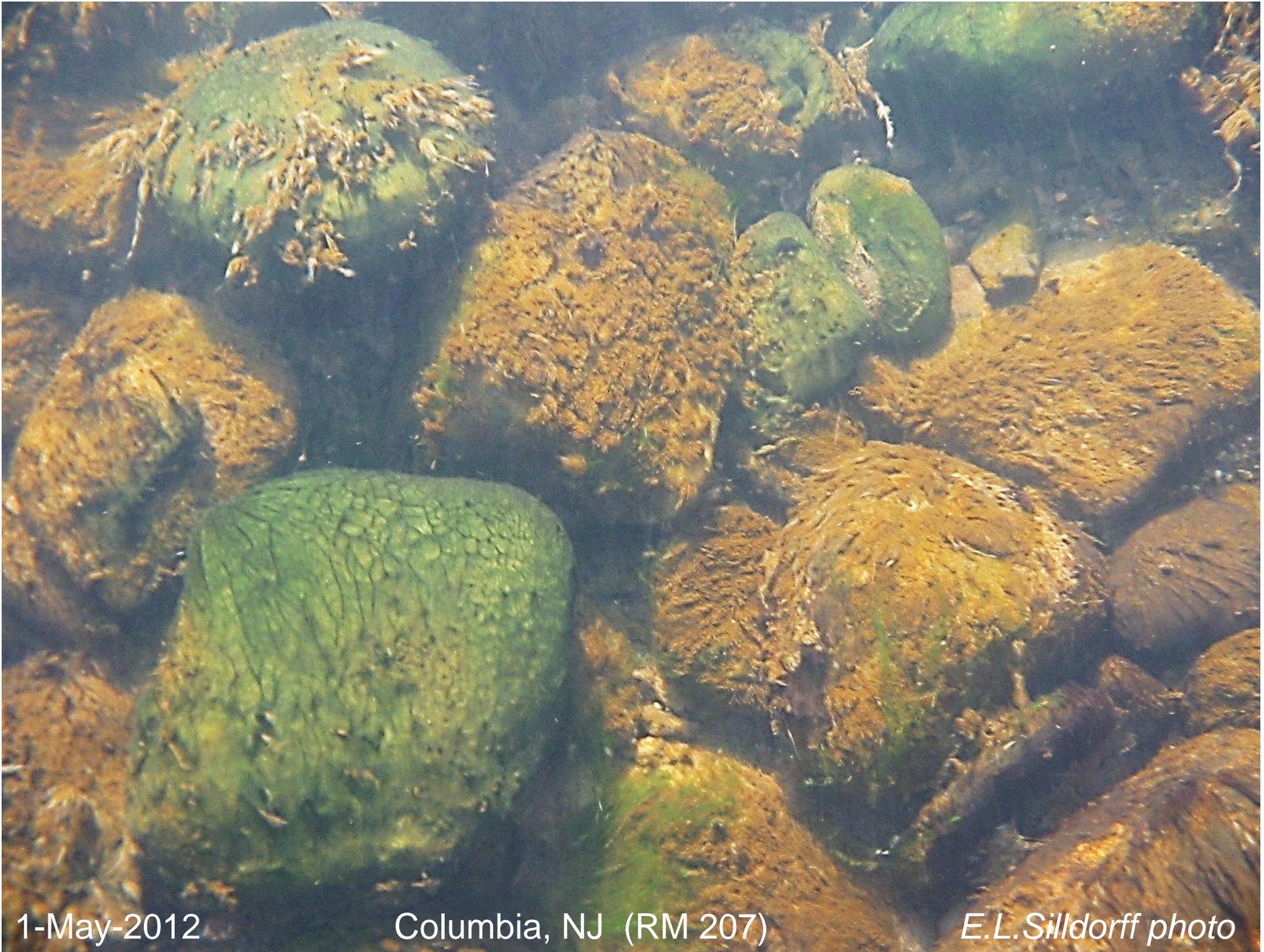
E.L. Silldorff photo



1-May-2012

Dingman's Ferry, PA (RM 238)

E. Wentz photo



1-May-2012

Columbia, NJ (RM 207)

E.L. Silldorff photo



4-May-2012

Easton, PA (RM 184)

E.L. Silldorff photo

2012 Surveys of “Bloom” Conditions on the Delaware R

- Independent reports week of April 16th, 2012
 - Upper Delaware mainstem, E Br & W Br (PADEP)
 - Upper & Middle Delaware from above Lackawaxen R. to Dingman’s Ferry (DRBC)
- Follow-up surveys by NPS & DRBC document areas with high density blooms on mainstem from Hancock to the Lehigh R confluence
- Confirmed populations on the mainstem below the Lehigh R confluence down to Trenton, but low-stalk form without characteristic appearance
- Confirmed population in Dyberry Cr (PA tributary by PADEP)

Confirmed (but low-stalk form)

Next Steps

- **Containment !!!**
 - ✓ Spread the word
 - ✓ Clean & decontaminate gear
- Monitor phenology in the Delaware River (NPS, DRBC)
- Evaluate conditions in tributaries (NJDEP, PADEP, PFBC, NYSDEC)

Pennsylvania Fish & Boat Commission
pennsylvania PA

CLEAN YOUR GEAR
Help reduce the spread of Aquatic Invasive Species

Report AIS
Aquatic Invasive Species (AIS) are plants and animals that have been introduced into new ecosystems and have environmental, recreational, economic or health impacts. These invaders may damage equipment and compete with native species. Anglers and boaters may unknowingly introduce AIS into new waters.

Stop aquatic hitchhikers by following these simple steps.
Check your equipment before leaving any body of water. Inspect every inch of your boat, trailer and fishing gear. Remove and leave behind plants, mud and aquatic life.

Clean Your Gear

1. Check
2. Drain
3. Clean
4. Or Dry

Check your equipment before leaving any body of water.
Inspect every inch of your boat, trailer and fishing gear. Remove and leave behind plants, mud and aquatic life.

Check your boat

- Anchor and line
- Motor lower unit
- Hull
- Trailer hitch, rollers, lights and axle
- Life jackets
- Swimming floats, water skis, wakeboards or tubes

CLEAN YOUR GEAR
Check
Drain
Clean
Dry

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Home » Animals, Plants, Aquatic Life » Nuisance & Invasive Species » Preventing the Introduction and Spread of Aquatic Invasive Species » Disinfection Techniques for Fishing and Boating

Disinfection Techniques for Fishing and Boating Equipment

If your boating and fishing equipment cannot be dried before its use in another body of water, it must be disinfected. Disinfection recommendations vary depending on the type of equipment and disease of concern. Be particularly aware of bilge areas, livewells and bathtubs in boats. These areas are difficult to dry and can harbor invasive species.

Effective disinfection techniques include:

Hot Water: Soak equipment in water kept above 140°F (hotter than most tap water) for one minute or for 20 minutes in water that is at least 110°F. Note that hot water can delaminate Gore-Tex® fabric and damage other sensitive clothing items. Household steamers may also be used for disinfection by exposing equipment to steam for 1 minute. Commercial hot-water car washes are effective for disinfecting boats and vehicles.

Bleach: Soak or spray equipment for at least one minute with a 2% bleach solution (3 ounces of household bleach mixed with 1 gallon of water). If whirling disease is suspected, a 10% solution should be used (13 ounces of household bleach mixed with 1 gallon of water). Note that bleach is an extremely effective disinfection agent, but it is a caustic substance that can be corrosive to aluminum and other sensitive fishing and boating equipment.

Cleaning Agents: Of the materials traditionally used to disinfect for human or animal health purposes, quaternary ammonium compounds have been found to be effective in controlling fish viruses and pathogens, including whirling disease. Commercial formulations, such as Parvasol® and Kennelsol®, are available through laboratory or veterinary supply companies. Household cleansers/disinfectants, such as Formula 409® and Fantastick®, that contain the quaternary ammonium compound alkyl dimethyl benzyl ammonium chloride can also be used to disinfect equipment. These solutions can be used full strength as a spray, or diluted for soaking with 2 parts water to 1 part disinfectant. For all materials, follow label instructions and be sure to soak equipment for a minimum of 10 minutes. Be sure to dispose of materials away from surface waters in accordance with label restrictions.

WARNING

The invasive algae "Didymo" is present in this river.

What is Didymo (*Didymosphenia geminata*)?
Didymo, or "rock spot," is an invasive algae that has infested waters in 16 states, and has recently been found in Vermont, Quebec, and New York rivers. It forms dense mats on the river bottom that are barriers to native organisms (caddis, mayflies, and stoneflies). As a result, fish populations can decline, and fishing becomes very difficult.

Didymo is not considered a significant risk to human health.
(Photograph courtesy of Tim Daley - PA DEP)

Didymo spreads easily!
Microscopic cells absorb into and adhere to equipment, clothing, boats or any other damp item. If these items are not cleaned and dried completely, the algae can live for months and spread to other water bodies the next time they are submerged.

How can I tell if I see Didymo?
Didymo can be distinguished from other species by:
Color - beige-brown/white but not green
Touch - feels like wet wool rather than slimy
Strength - securely attaches to stones and does not fall apart when rubbed between your fingers

STOP THE SPREAD OF ROCK SPOT!

After leaving this water:
Check - Remove all visible clumps of algae and plant material from fishing gear, waders, clothing, footwear, boats and anything else that has been in the water.
Clean - Using **HOT** tap water and lots of soap. **Scrub** boats and other "hard" items thoroughly. **Soak** clothes, felt-sole waders, and other "soft" items for **30 minutes!!!** Or soak in 2.5-5.0% solution of household bleach (3 ounces bleach /1 gallon water) with water for **10 minutes**.