The South Florida Aquatic Plant Management Society

The Hydrophyte

Volume 28 Issue 3

Highlights

President's Message

Hoping everyone is having a productive and enjoyable summer. It has been a quiet start for tropical development thus far, but this is where we don't let our guard down as the peak of hurricane season is still ahead of us.

I have noticed a disturbing trend which began a few years back and still continues as of today. Vehicles and equipment utilized by aquatic resource managers are being vandalized to the point of damage. Loosening lug nuts from boat trailer tires, spare tires, and pulling pins on trailer hitches. Why is this happening? I can only speculate. However, I have a pretty good idea that it all stems from water quality related issues and a lack of understanding from the public. I've mentioned numerous times that "Outreach and Education" are very important. A good number of us have encountered irate fisherman and uninformed residents. You cannot educate someone who does not want to be educated. Please be aware of your surroundings and make sure to check your vehicles before and after treatments for potential safety concerns. "An ounce of prevention is worth a pound of cure". Be aware, the public is watching you!

I'd like to thank everyone who attended the last South Florida Aquatic Plant Management Society's quarterly meeting at the Lee County Hyacinth Control District's training center and thanks to all of our wonderful sponsors who provided refreshments, breakfast and an excellent lunch. One thing about our organization, "we feed you well and if you left hungry, it's your own fault". Also, a big hand to the "Boss Lady" Colleen Sullivan, she's the person behind the curtain to make things happen. Which reminds me of a funny sign I read once "do you want the man in charge or the woman who knows what's going on?" Enjoy the rest of your summer.

Keith Andreu – President
South Florida Aquatic Plant Management Society

Cover Photo:
Allstate Resource Management

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The Francis E. "Chil" Rossbach Scholarship Fund

Funds from the scholarship are used to help defray costs for students taking classes related to the study of aquatic environmental sciences or related areas. The scholarship is open to anyone, and all are encouraged to apply. Applications will be accepted throughout the year and the scholarship awarded when a suitable candidate is found. Money raised by the Society during the year partially goes to fund this scholarship, the intent of which is to promote the study of aquatics.
For an application, please go to www.sfapms.org.

Heat Exhaustion and Heat Stroke Are Too Hot To Handle on Your Own

This article first appeared on Cleveland Clinic Health Essentials | health.clevelandclinic.org and is reproduced with permission.

Sultry summer days might have you dreaming of fun in the sun. But those bright, sunny days can also have a dark side if you're not careful.

"Heat illnesses can be very serious, and it's important to recognize the symptoms," says emergency medicine physician Thomas Waters, MD.

Heat stroke is the most severe form of heat illness, with primary symptoms that include confusion, altered mental status and a very high core body temperature above 104 degrees Fahrenheit (40 degrees Celsius).

Heat exhaustion is less dangerous, but can present with muscle cramps, headaches,dizziness, weakness, fatigue, nausea and vomiting. And there are other heat illnesses, too —not to mention the dangers of extreme sunburn.

Dr. Waters shares ways you can prevent heat exhaustion and heat stroke by recognizing the symptoms and responding appropriately.

"Heat illnesses can be very serious, and it's important to recognize the symptoms."

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Are heat stroke and heat exhaustion the same?

Heat exhaustion and heat stroke are types of heat-related illnesses. “People often talk about heat exhaustion and heat stroke as though they are separate things. But they exist on a spectrum from not-so-serious to a significant and life-threatening emergency,” Dr. Waters clarifies.

The spectrum of heat-related illnesses includes:

Heat rash:

Also known as prickly heat, this red, stinging rash develops when you’re hot and sweaty. It’s most likely to show up in areas where sweat gets trapped, like inside your elbows and behind your knees.

Heat cramps:

Painful muscle cramps can strike when you’re exercising in hot weather. They develop when you sweat so much that your body loses salts and fluids.

Heat exhaustion:

More serious than heat rash or cramps, heat exhaustion occurs when your body can’t cool itself through sweating. Untreated, it can progress to heat stroke.

Heat stroke:

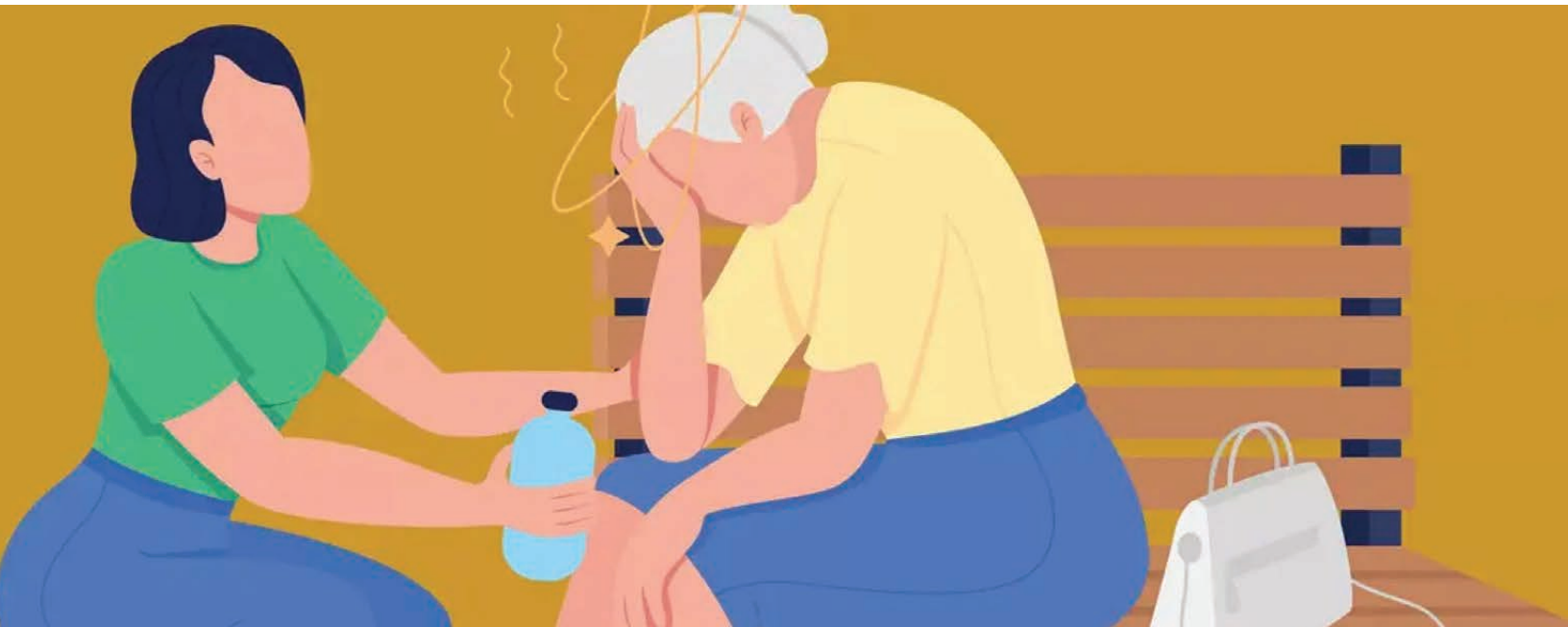
Sometimes called sunstroke, this is the most severe heat-related illness. During heat stroke, your body temperature climbs quickly to dangerous levels. Often, people with heat stroke stop sweating.

“The body’s mechanisms for dealing with heat are overwhelmed,” Dr. Waters explains. “Without treatment, can be deadly.”

One way to think about heat-related illness is to recognize sweating as your body’s way of cooling itself down. Sometimes, on hot, humid days, sweating might not actually be enough to offer all the cooling your body needs.

That’s especially true if you’re working out or doing physical work in hot and humid weather.

Heat exhaustion and heat stroke both cause your body temperature to rise. And that temperature spike goes hand in hand with several other symptoms.



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Symptoms of heat stroke and heat exhaustion to lookout for

Heat exhaustion and heat stroke are similar. And while one leads to another, both are equally dangerous when left untreated. Signs and symptoms of both include:

Heat exhaustion
High body temperature between 101 F (38.3 C) and 104 F (40 C).
Heat stroke High body temperature above 104 F (40 C).
Pale skin.
Heat stroke Dry, red skin.
Muscle cramps.
Heat stroke Inability to sweat.
Headaches.
Heat stroke Seizures.
Dizziness.
Heat stroke Dizziness or fainting.
Weakness and fatigue.
Heat stroke Slurred speech.
Rapid breathing and increased heart rate.
Heat stroke Hallucinations and altered mental state.
Nausea and vomiting.
Heat stroke Confusion, aggression or agitation.

Anyone can experience these heat illnesses in hot, humid conditions — and it's important to not just rely on your body temperature for self-diagnosis. If you experience any of these symptoms, get out of the sun, try to bring your temperature down and seek medical attention if your symptoms continue to get worse.

Another important thing to consider is that the following factors can increase your risk of developing these heat illnesses:

Age: The young and old are most vulnerable to heat exhaustion and heat stroke. "Babies,children and older adults are at greater risk," Dr. Waters says.

Activity level: People working or exercising outside in the heat are more likely to develop heat-related illnesses.

Dehydration: If you're dehydrated — from sweating a lot and not drinking enough to replace the lost fluids — you have a greater risk of developing heat illness. Drinking alcohol outside on a hot day can also increase your risk for these heat illnesses, as it contributes to dehydration.

Adaptation: Your body gets better at responding to heat over time. If you travel from a chilly winter climate to a tropical location, you might be at greater risk until your body adjusts to the heat. The same is true if you start a new workout routine in hot weather. "That's why most states now have laws to make sure high school athletes gradually work up to doing strenuous exercise in hot weather," Dr. Waters shares. "It takes time for your body to acclimate to the heat."

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Treating heat stroke vs. heat exhaustion

If you have any signs of heat exhaustion, get out of the heat as quickly as you can. Drink some water to rehydrate and take steps to bring down your body temperature. It can also be helpful to immerse yourself in a tub of cold water to bring your temperature down quickly.

"To cool your body, apply ice packs to the neck, armpits and groin," Dr. Waters advises. "You can also squeeze a rag of cool water over yourself to help you cool down."

If you continue to feel sick — or notice signs of heat stroke, especially neurologic symptoms such as confusion, stumbling or clumsiness — call 911 or your local emergency hotline.

Emergency room professionals have several methods to cool your body quickly and will monitor you for complications of overheating, such as damage to organs.

"Heat stroke is an emergency," emphasizes Dr. Waters. "It can become deadly very quickly. Heat stroke isn't something you can just push through, no matter how strong you are. The most important thing you can do is pay attention to the warning signs and listen to your body."

Tips to avoid heat illness in the future

Heat exhaustion and heat stroke are no joke. But even when it's sweltering outside, there are ways to stay safe:

Drink up: Dehydration increases the risk of heat-related illness, so drink plenty of water as temperatures increase.

Take five: Most cases of heat exhaustion and heat stroke occur when people are exercising or working outside in hot conditions. If possible, avoid intense exercise and long stretches of activity on steamy days. "Pay attention to the weather. If it's hot, sunny or humid, take frequent breaks," advises Dr. Waters.

Chill out: If you notice signs of heat exhaustion, get to a cool area ASAP. "Ideally, get into the air conditioning, but at least into the shade," he adds.

Pay attention: "It's important for parents, coaches, school staff and others to pay attention to what's going on around them," Dr. Waters states. People don't always recognize the signs of heat illness in themselves. So, if you notice symptoms in others, help them get to a cool, shady place. If symptoms get worse, seek medical attention.

"Heatstroke is preventable, as long as you make the right moves," says Dr. Waters.

Cooked Florida Pink Shrimp and Citrus Ceviche

Recipe from Fresh From Florida
Florida Department of Agriculture and Consumer Services

Ingredients

1 pound large Florida pink shrimp, peeled and deveined with the tail on

2 Florida pink grapefruit, peeled and segmented, seeds removed

3 Florida tangelos, peeled and segmented, seeds removed

3 Florida tangerines, peeled and segmented, seeds removed

1 Florida sweet pepper, diced

1 large Florida avocado, peeled, pitted and diced

2 tablespoons seafood boil seasoning

1 red onion, diced

1 tablespoon olive oil

3 limes, juiced

1/2 cup fresh cilantro, chopped

1 bag plantain chips or tortilla chips

Sea salt and fresh ground pepper, to taste

Preparation

Fill a medium-sized sauce pot 3/4 the way with water, and heat over medium-high. Add the seafood seasoning to the boiling pot of water. Add the shrimp and cook for 2 to 3 minutes or until completely done. As soon as the shrimp are done, plunge them into an ice water bath to stop the cooking and cool them off. When the shrimp are completely cool, strain them and put them into a medium-sized mixing bowl. Add the citrus, sweet pepper, red onion, olive oil, lime juice, cilantro and avocado. Season the ingredients to taste with salt and pepper. Stir to combine ingredients. Serve ceviche with chips.

A Beginner's Guide to Water Management – Fish Kills

Understanding Fish Kills in Florida Freshwater Systems

Joe Richard

Chuck Cichra

The periodic depletion of dissolved oxygen in a lake or waterbody is by far the most common cause of fish kills in Florida.

A fish kill is an event in which numerous dead fish are suddenly observed in a waterbody. Fish kills can be dramatic and disturbing and appear harmful to the fish population. However, typical fish kills only affect a small percentage of fish in the waterbody. Fish kills may occur for several reasons.

LOW DISSOLVED OXYGEN

The most common cause of fish kills is related to the depletion of dissolved oxygen in shallow waterbodies. Oxygen depletion may be caused in various ways:

• When aquatic organisms die, oxygen is pulled from the water and used in the decay process. Oxygen can become critically reduced during this process, especially in waterbodies that have an abundance of algae. In waterbodies where the concentration of total chlorophyll exceeds 100 micrograms per liter, (indicating a high algae level), a fish kill can be caused by oxygen depletion. This is due to the large quantity of naturally decomposing algae consuming oxygen, thereby reducing oxygen levels.

• Similarly, oxygen depletion can occur when large amounts of aquatic plants die within a short time. To prevent this, herbicide applicators commonly treat only small areas of aquatic plants at one time. Or, they use herbicides that cause plants to die slowly. They also take dissolved oxygen readings prior to herbicide applications as a precaution.

• A fish kill due to oxygen depletion can also be triggered by several days of overcast skies, especially during hot weather. This happens because aquatic plants and algae add oxygen to the water only when there is sufficient sunlight for photosynthesis. However, they consume oxygen all the time in their normal biological processes. When overcast skies persist for several days, oxygen levels become depleted because the plants are using more oxygen than they are producing. Waters are particularly vulnerable when the temperature is high, because warmer water contains less oxygen to start with than cooler water. Fish "gulping" at the surface may be a sign of an oxygen problem.

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Cold Weather Fish Kills

Some species of fish naturally die in large numbers after spawning or when they are stressed by unusual or harsh weather conditions.

When water or air temperatures fall below a critical level for a particular species (scientifically termed a lower lethal temperature), they will die. For example, humans can die due to hypothermia when their body core temperature falls below a critical level. Florida has a sub-tropical climate and often has mild winters.

Exotic tropical fish have become established or extended their range further into north Florida. When we have record-setting cold temperatures, our water temperatures can rapidly fall below the lethal temperature for many species. This can result in large die-offs of tropical fish such as blue tilapia and suckermouth catfish, among others.

In addition to exotic fish, some of our native fish are also prone to cold weather-induced kills. Gizzard and threadfin shad often die during cold weather. In Florida, we also have the Florida subspecies of largemouth bass that has evolved in Florida's subtropical climate.

Florida largemouth bass can die due to low water temperatures, while the "northern" largemouth bass survives. Marine species such as common snook, tarpon, and sea trout can also die, especially if they are located in shallow areas that experience rapid drops in water temperature.

Even if fish don't immediately die due to cold weather, they will often become stressed, making them more susceptible to illnesses such as bacterial and fungal infections.

They may die or have temporary sores on their bodies.

Photos by Joe Richard

Cold temperature related fish kills are easily identified because they generally occur after extended periods of cold weather and almost all of the dead fish will be cold intolerant species, such as the blue tilapia pictured above.

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0.83	2.50	2.84
1.00	3.00	3.40

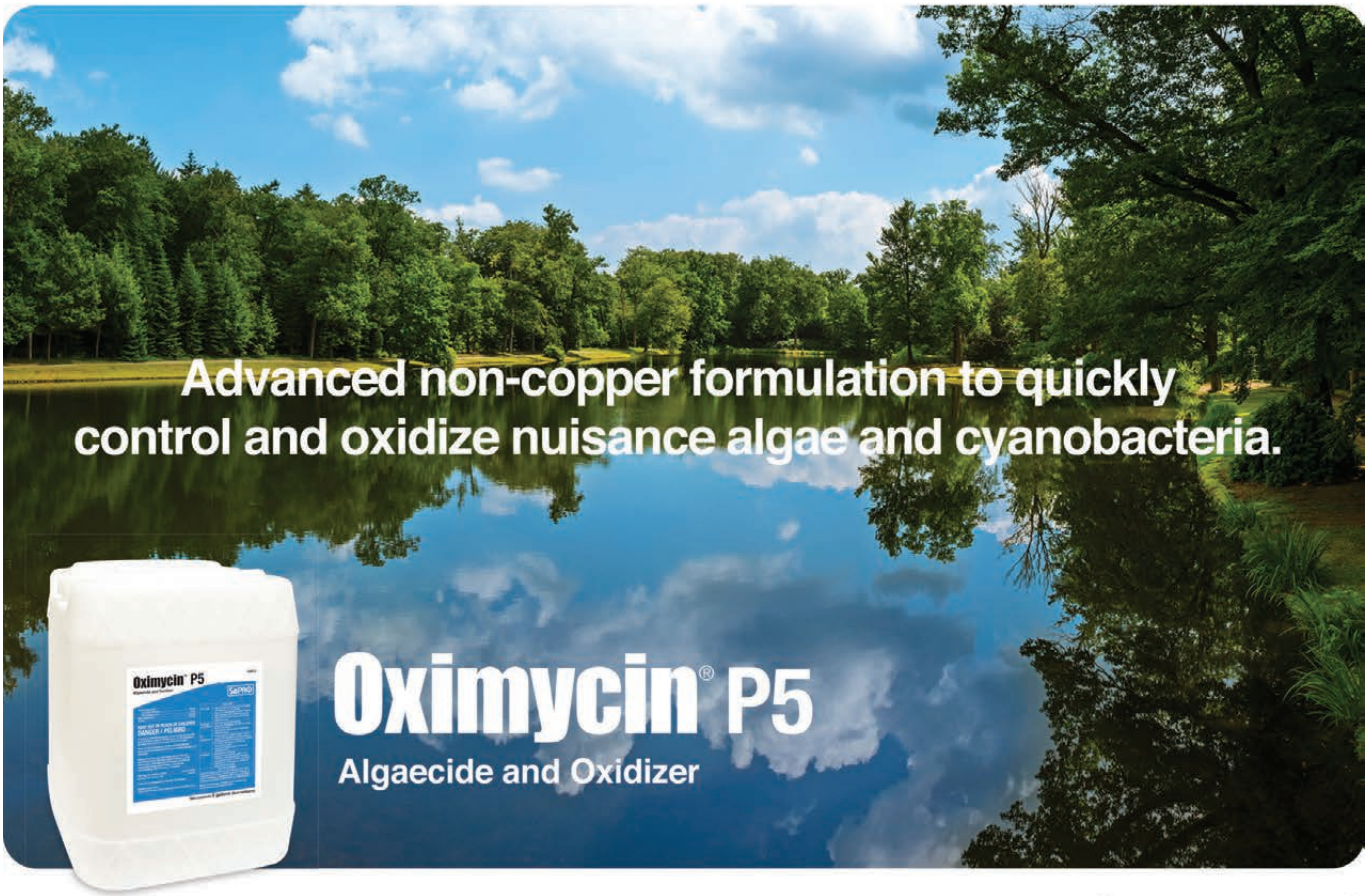
Other Fish Kill Causes

Most fish kills are due to naturally occurring biological occurrences.

Observations are critical in determining the cause of a fish kill. One should write down a description of all living and dead animals in and around the pond (i.e., crayfish, turtles, frogs). Record the number, size and species of dead fish as well as any unusual behavior of live fish, such as swimming near the surface or jumping onto the bank. The following table presents some causes of fish kills.

Criteria	Oxygen Depletion	Algal Bloom	Pesticide Toxicity	Disease
Fish Behavior	Gasping, swimming near the surface	Erratic swimming	Erratic swimming	Erratic swimming
Size of Fish	Large fish die first	Small fish die first	Small fish die first	Any size
Species Selectivity	None; if oxygen is low, carp and bullheads may survive partial depletion	None; all species affected	Usually one species dies before others	Usually one
Time of Fish Kill	Nighttime and early morning hours	Bright sun, 9 a.m. – 5 p.m.	Any hour, day or night	During period of stress
Plankton Abundance	Algae dying	Abundance of one alga species	Pesticide may kill algae	No effect
Dissolved Oxygen	<3 ppm, usually <2 ppm	12-14 ppm; 8-10 ppm	No effect	No effect
Water Color	Brown, gray, or black	Dark green, brown or golden	Normal	No effect

Table 1: From **Field Manual for the Investigation of Fish Kills**. 1990. Fish and Wildlife Service. National Technical Information Service.



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Fish Kill Conclusions

The Bad News

- Fish kills occur frequently in Florida and most of them are from natural causes.
- It is difficult to predict when a fish kill will occur.
- Even if a fish kill is predicted, there is not much that can be done to prevent it, especially in larger waterbodies.


Tampa Tribune

The Good News

- In the event of a fish kill, you may see a lot of dead fish but there are usually a lot more still alive.
- If water quality declines, there are often many refuges for fish to escape to.
- Because fish lay many eggs, their reproductive potential is usually strong. As a result, their populations are generally able to rebound from a fish kill within a couple of years.

To learn more about naturally occurring fish kills, human induced fish kills, and what you can do if you observe a fish kill, see:

https://plants.ifas.ufl.edu/manage/overview-of-florida-waters/fish-and-wildlife/fish-kills/

Photos by Joe Richard

Sun Exposure and Working Outdoors

Sun Protection

Had a sunburn? When working outdoors it is important to practice sun safety. Besides skin damage, repeated exposure to the sun can cause certain cancers. Long-term exposure and repeated damage can lead to melanoma, a dangerous form of skin cancer. Damage typically occurs through progressive exposure over several years.

Limiting UV exposure, dressing appropriately and applying sunscreen can reduce the chances of skin damage and disease. Take greater precautions against sun exposure if you:

- Have a history of skin cancer.
- Have a lot of freckles or moles.
- Burn easily or have a fair complexion.
- Have blonde or red hair.
- Have blue, green or gray eyes.

A common misconception is that people with darker complexions are not at risk for skin cancer, because they do not easily sunburn. While it is true that people with darker complexions are more naturally protected from damage (melanin blocks UV rays) than those with lighter complexions, everyone can experience skin damage from prolonged exposure. Prolonged exposure and repeated damage can lead to certain forms of skin cancer and, if left unchecked, can be deadly.

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Recommendations for Workers

Workers should follow these recommendations to protect themselves from UV damage from sun exposure:

Wear sunscreen with a minimum of SPF 15.

- SPF refers to the amount of time that persons will be protected from a burn. An SPF of 15 will allow a person to stay out in the sun 15 times longer than they normally would be able to stay without burning. The SPF rating applies to skin reddening and protection against UVB exposure.
- SPF does not refer to protection against UVA. Products containing Mexoryl, Parsol 1789, titanium dioxide, zinc oxide, or avobenzone block UVA rays.
- Sunscreen performance is affected by wind, humidity, perspiration, and proper application.

Old sunscreens should be thrown away. They lose their potency after 1-2 years.

Sunscreens should be liberally applied (a minimum of 1 ounce) at least 20 minutes before sun exposure.

- Special attention should be given to covering the ears, scalp, lips, neck, tops of feet, and backs of hands.

Sunscreens should be reapplied at least every 2 hours and each time a person gets out of the water or perspires heavily.

- Some sunscreens may also lose efficacy when applied with insect repellents, necessitating more frequent application when the two products are used together.

Follow the application directions on the sunscreen bottle.

Another effective way to prevent sunburn is by wearing appropriate clothing.

- Dark clothing with a tight weave is more protective than light-colored, loosely woven clothing.
- High-SPF clothing has been developed to provide more protection for those with photosensitive skin or a history of skin cancer.
- Workers should also wear wide-brimmed hats and sunglasses with almost 100% UV \ and with side panels to prevent excessive sun exposure to the eyes.

Fiery Florida Mango Cocktail

Recipe from Fresh From Florida
Florida Department of Agriculture and Consumer Services

Ingredients

2 ounces Florida vodka

1 Florida chili pepper, sliced

2 ounces mango nectar

1 lime, juiced (reserve a slice for garnish)

1 teaspoon chili-lime seasoning

Dried mango for garnish (spicy if desired)

Preparation

Roll the lime on your cutting board a few times and cut it in half. Cut a wedge from half of the lime and use it to rim a tall glass. Lightly dip the rim of the glass into the chili-lime seasoning. Pour the vodka, mango nectar, lime juice, a few slices of chili pepper and several ice cubes into a cocktail shaker. Place the top on the shaker and shake vigorously until the outside of the shaker has frosted. Fill a tall glass with ice, and evenly strain the vodka drink into the glass. Garnish with fresh lime, dried mango slices and a slice of Florida chili pepper if desired.

CALENDAR OF EVENTS

SFAPMS Meeting
September 19, 2024
Location TBD

FAPMS 48th Annual Conference
October 7-10, 2024
Daytona Beach, FL

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November 16, 2024
Zoom Course

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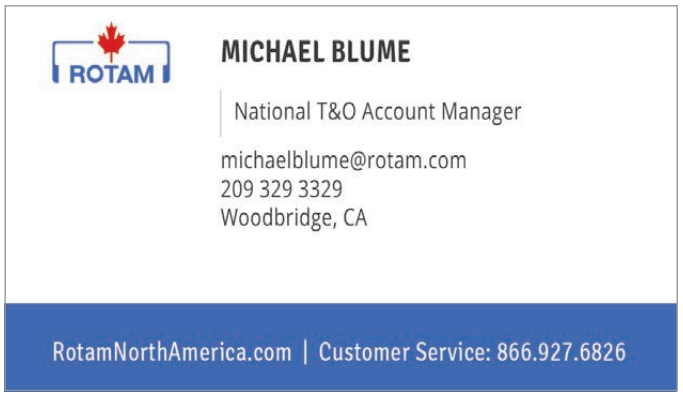
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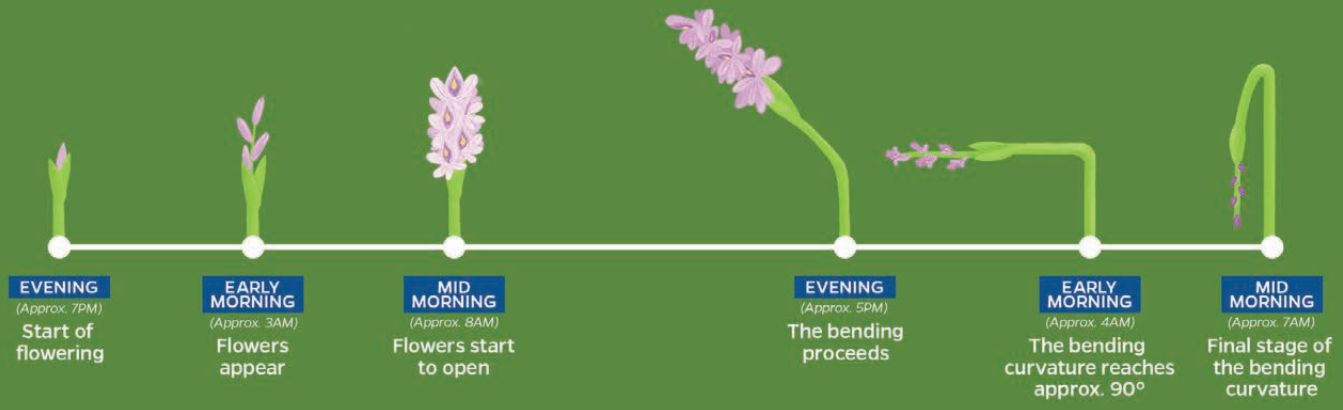
Did you know?

A water hyacinth flower lasts for less than 48 hours

Although water hyacinth (*Eichhornia crassipes*) is native to Brazil, this problematic plant is invasive throughout many parts of the world. Water hyacinth's purple flower is its most striking feature and each flower only blooms for less than 48 hours. Then, it has a gravitropic response, or response to gravity, by bending downward to place seeds into the water. This is just one of many ways this plant can reproduce and grow many new plants quickly.



Adapted from Penfound, Wm. T. & Earle, T.T. (1948). The Biology of the Water Hyacinth. *Ecological Monographs*, *18*(4), 447–472. https://doi.org/10.2307/1948585

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