The South Florida Aquatic Plant Management Society

The Hydrophyte

Volume 27 Issue 4

Highlights

85% of Coral Reef Fish Studied are Overfished

Climate Change Emerges as Major Driver of Amphibian Declines

Muck and Invasive Plants

Invasive Plants: Small Leave Climbing Ferns

President's Message

This year has been an exciting and fluid year. I cannot believe it is almost over and it is time to pass the gavel over to Keith Andreu. I would like to thank all of the sponsor and board of directors for their continued support over the 2023 year. All the best wished to Keith as he takes the reins for the 2024 year. I know that Coleen will continue to help keep him on the right track as she has done for me over this past year. Coleen has definitely been a huge proponent of our successful meetings and I look forward to what she will put together for us in the near future.

If you would like to be more involved with the organization as a board of director or help out on a committee please feel free to reach out to me or Coleen.

Until the next time my friends let's all stay safe out there!

James Boggs

James Boggs - President
South Florida Aquatic Plant Management Society

Cover Photo:
Allstate Resource Management

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(407) 670-4094 dharmen.setaram@heritagepg.com

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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.

85% of coral reef fish studied are overfished, new research shows.

By: Diana Udel | University of Miami

A new study led by scientists at the University of Miami (UM) Rosenstiel School of Marine and Atmospheric Science found concrete evidence that more than 85 percent of the grouper and snapper studied are overfished as a direct result of increasing human demand for seafood.

The research team analyzed 30 years of population data for 15 coral reef fish species central to South Florida's commercial and recreational fisheries using their length-based risk analysis (LBRA) framework.

They found that three out of the five grouper species, all eight snapper species, and two grunts analyzed were below the 40 percent minimum spawning potential ratio, a regulation necessary to sustain fish populations.

For black grouper, by increasing the current minimum catch size from 24 inches (61 cm) to 44 inches (110 cm), the spawning population would grow to 40 percent, large enough to produce a meaningful number of new juveniles. It would take approximately 10 years for the population to recover to a point where it was minimally sustainable and 22 years to reach equilibrium where a sustainable catch becomes possible.

"The situation is analogous to your bank account," said the study's lead author Jerald Ault, professor of environmental science and policy at the UM Rosenstiel School. "That is, without a significant account balance, in this case fish in the water, you can't get meaningful interest— significant numbers of large fish to catch, but also to spawn and replenish the reef."

The study, "Length-based risk analysis of management options for the southern Florida USA multispecies coral reef fish fishery," published in the journal Fisheries Research, provides a blueprint to effectively balance fishery production—how many fish are taken from the sea—to reduce overfishing and protect these valuable fish populations now and in the future.

The study was supported by the NOAA Southeast Fisheries Science Center & Coral Reef Conservation Program Grant No. NA20OAR4320064, National Park Service Natural Resource Conservation Assessment Program Grant No. P18AC01130-03, Florida RESTORE Act Center of Excellence Grant No. FIO-4710112600B, Florida Power & Light Corporation Contract No. 2000347910, and the National Parks Conservation Association.

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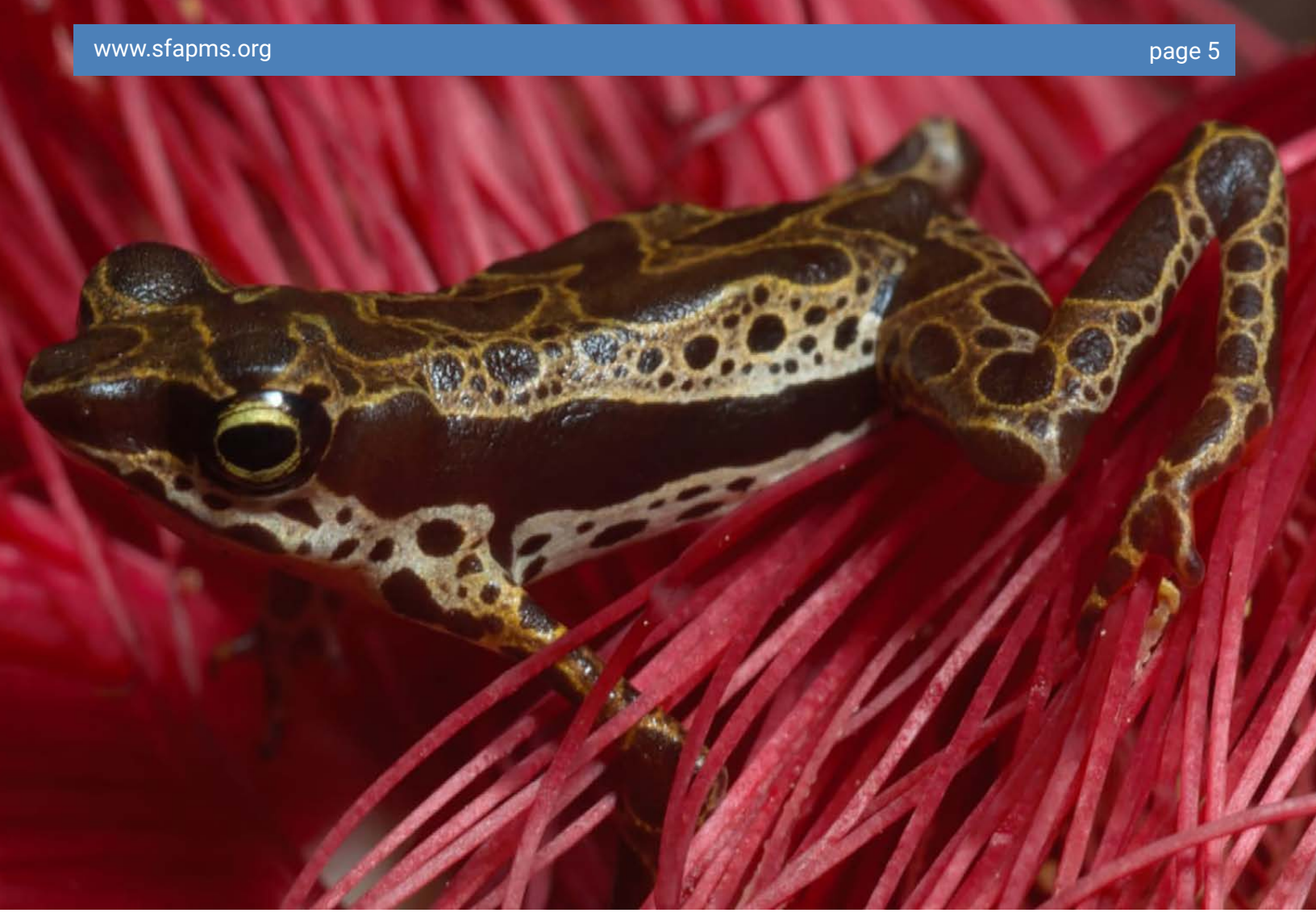
0.83	2.50	2.84
1.00	3.00	3.40



Climate Change Emerges as Major Driver of Amphibian Declines, New Research Finds

By: JoAnn Adkins | Florida International University

Amphibians are in trouble and in desperate need of conservation action, according to a new global assessment of the world's amphibian population.

Salamanders are experiencing the greatest decline in numbers, but frogs, toads, newts and salamanders throughout the Neotropics — extending from South Florida and Caribbean islands to Central and South America — are of particular concern, according to Alessandro Catenazzi, FIU biologist and one of the primary researchers on the international project. The team evaluated the status of 8,011 species of amphibians tracked by the International Union for Conservation of Nature (IUCN). Their findings, published this week in Nature, indicate nearly 41 percent of amphibian species are threatened with extinction, making them the most imperiled class of vertebrates on the planet.

Since 1980, at least 37 species have gone extinct, with disease and habitat loss being the primary culprits. The scientists warn climate change is quickly emerging as a major threat, attributing to 39 percent of populations declines since 2004.

"Global emerging diseases increasingly threaten biodiversity worldwide."

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"Global emerging diseases increasingly threaten biodiversity worldwide, and amphibians are one of the most dramatic examples of species extinctions caused by disease," Catenazzi said. "No other group of vertebrates has been so negatively affected by a single disease. We urgently need better strategies to prevent pandemics and mitigate the effects of introduced disease."

While the news is not good for amphibians, the scientists do offer hope in this latest assessment. Enforced habitat protections resulted in status improvements for some species, indicating this should be a conservation priority, especially in regions where agriculture, timber, plant harvesting, and infrastructure development are ever-present.

The Global Amphibian Assessment is the second of its kind. The first assessment was completed in 2004, offering scientists a baseline of data to measure extinction risk for this latest study.

Throughout the world, there are 8,615 known species of amphibians with 8,011 being listed on the IUCN's Red List, a comprehensive information source on the global conservation status of animals, fungi and plants.

"The Global Amphibian Assessment is our best tool to monitor changes in the conservation status of amphibian biodiversity, and to provide highly vetted and curated information that can form the basis for management and conservation actions aimed at preventing the extinction of species," he said.

The current assessment focused on population trends, ecological requirements, threats and distributional boundaries of amphibians worldwide. While the number of threatened and extinct species is increasing, the scientists hope this latest research will motivate governments and conservation agencies to substantially increase their investment and political will for conservation efforts of the world's amphibians.

The latest Global Amphibian Assessment is unable to account for the yet-to-be-identified species of amphibians, which are another area of concern, according to FIU researcher Alessandro Catenzzai. Many can be very small and reside in remote habitats that are not immune to disease and the effects of climate change. Catenazzi is very familiar with the elusive nature of many species, having identified nearly 60 previously unknown species throughout his career.

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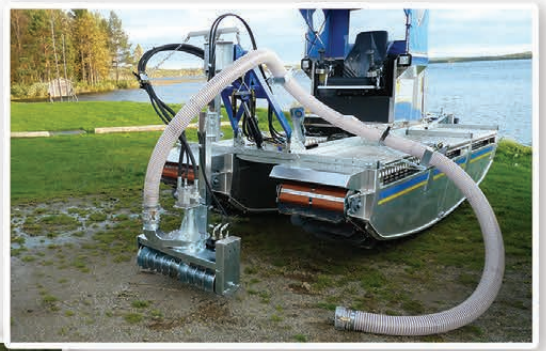

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MUCK AND INVASIVE PLANTS

WHAT IS MUCK?

- Muck is a brown to black substance created by decaying organic materials, like leaves and algae
- Muck naturally occurs at the bottom of water bodies like lakes, ponds, and other depressions
- A small amount of muck is normal in an aquatic ecosystem

THE PROBLEM

- Muck levels are all about balance, and too much muck is often tied to poor water quality and increased algae blooms
- Invasive plants can create an anaerobic environment and decrease sunlight under the water's surface, leading to a challenging environment for native plants and animals

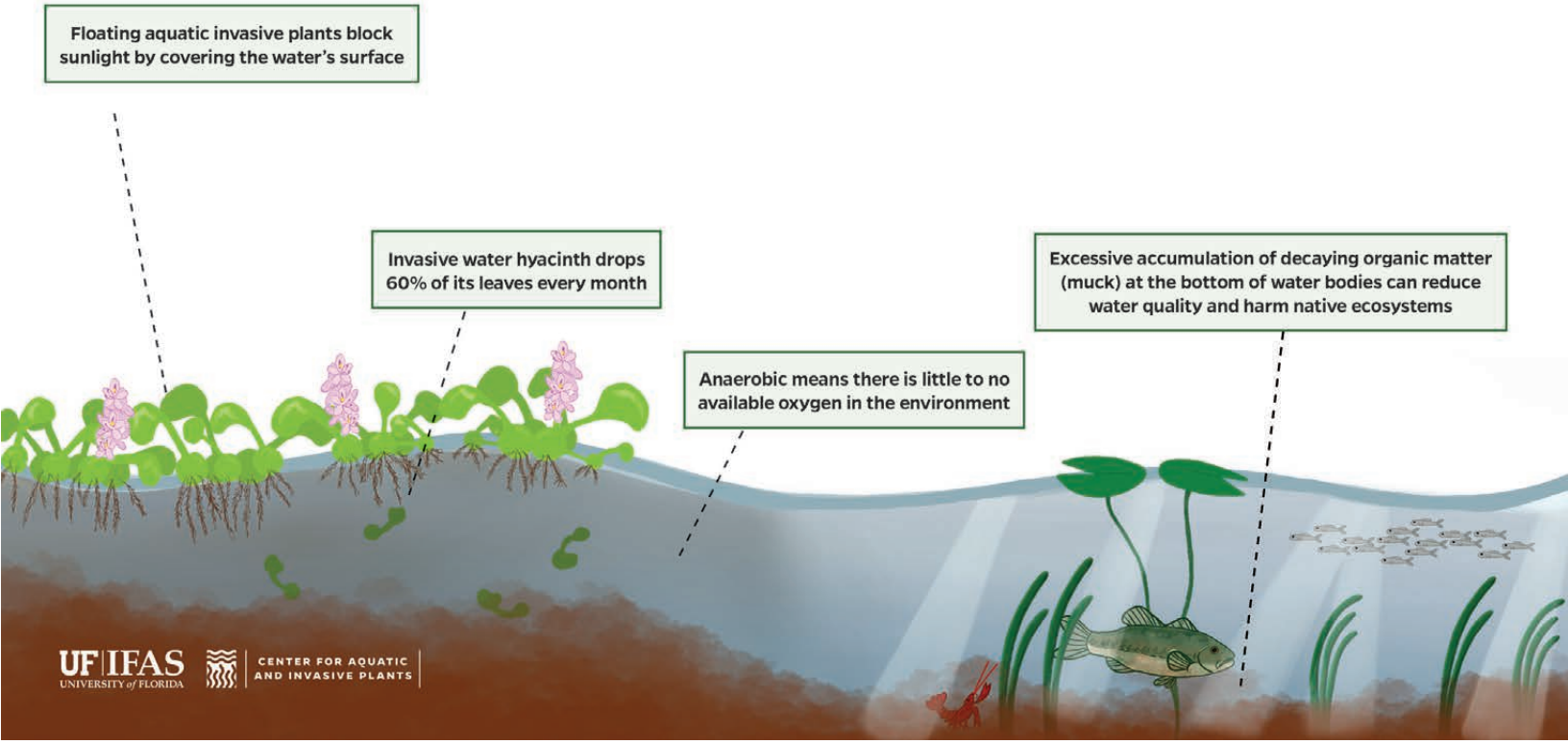
INVASIVE PLANTS AND MUCK

- Invasive plants grow rapidly, leaving little time for organic material to decay, resulting in muck accumulation
- Floating aquatic plants, in particular, create an abundance of muck

THE SOLUTION

PROACTIVE MANAGEMENT

- Proactive management of invasive plants is an approach that involves continuous, routine monitoring and management to maintain invasive or nuisance plant populations at low levels
- By controlling invasive plant populations, native plant communities can thrive and the effects of muck accumulation are reduced



Florida Stone Crab Claws with Orange Horseradish Sauce

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

Ingredients

16 to 20 Stone crab claws

8 ounces orange marmalade

2 tablespoons fresh horseradish, or more, to taste

Sea salt to taste fresh ground pepper, to taste

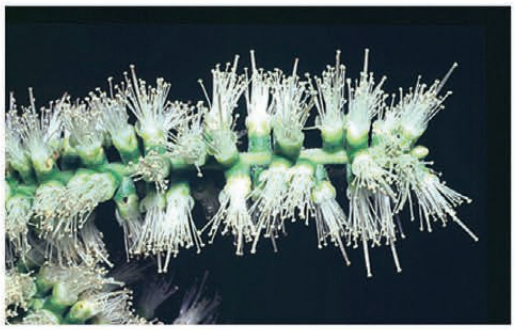
Preparation

In a small mixing bowl, combine horseradish and orange marmalade. Mix ingredients well. Taste sauce and adjust seasoning with extra horseradish and salt and pepper. Serve sauce with stone crab claws. Garnish with lettuce, fresh slices of orange and fresh herbs.

Weed alert

Melaleuca

(Melaleuca quinquenervia)



Melaleuca flowers

Melaleuca

Melaleuca is a large evergreen tree typically 65 feet in height with a brownish white, many-layered papery bark. Native to Australia and Malaysia, melaleuca was introduced into Florida in 1906 as a potential commercial timber and later extensively sold as a landscape ornamental tree and windbreak. It was also planted to dry up the Everglades to decrease mosquito populations and allow for development. Population estimates indicate melaleuca trees inhabit more than 400 thousand acres, mostly in South Florida.

Melaleuca capsules and seeds

Melaleuca trees grow quickly, typically 3-6 feet per year, in disturbed wet pine flatwoods, marshes and swamps. This nonnative tree is rapidly displacing native cypress and sawgrass in the Everglades. Melaleuca can flower five times per year. Any damage to the tree that cuts water flow to the stems containing seed capsules, such as fires, freezes and control techniques, will result in seed release. Seeds can remain viable for 10 years, and a single tree can store 2 to 20 million seeds.

Why melaleuca must be managed:

Melaleuca forms dense stands resulting in the almost total displacement of native plants that are important to wildlife. In the Everglades, melaleuca trees form nearly monospecific forests in formerly treeless sawgrass marshes, disrupting historical water flows. Melaleuca forests represent a serious fire hazard to surrounding developed areas because of the oils contained within the leaves that create hot crown fires.

Because of its aggressive growth rate, never plant melaleuca. Possession of melaleuca with the intent to sell or plant is illegal in Florida without a special permit.

Environmental damage caused by melaleuca forests:

- Melaleuca forests provide relatively poor habit for wildlife and almost totally displace native plant species thus decreasing biodiversity.
- Melaleuca invasions alter the landscape of the Everglades by creating monospecific forests in formerly treeless sawgrass marshes.
- Melaleuca forests alter ecosystem properties such as water flow in the Everglades.
- Dense stands of melaleuca trees produce hot crown fires that result in native tree mortality and pose a significant threat to developed areas.

Dense melaleuca tree stand in a Florida waterway.

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Synonymy: Metrosideros quinquenervia, M. coriacea, M. albida, Melaleuca rubriflora, M. maidenii, M. smithii, M. cunninghamii

Melaleuca *(Melaleuca quinquenervia)*

Melaleuca trees have extensively invaded South Florida, displacing native vegetation in wetland and upland environments.

Leaves: alternate, simple, grayish green, narrowly lance-shaped, to 10 cm (4 in.) long and 2 cm (3/4 in.) wide, with the smell of camphor when crushed.

Stems: trunks to 33 m (100 ft.) tall, with brownish-white, many layered, peeling, papery bark.

Flowers: in creamy white to pinkish "bottle brush" spikes to 16 cm (6 in.) long.

Fruit: broadly cylindrical, thick-walled, capsules to 3 mm (3/8 in.) wide, in clusters surrounding young stems; each capsule holding 200-300 tiny seeds.

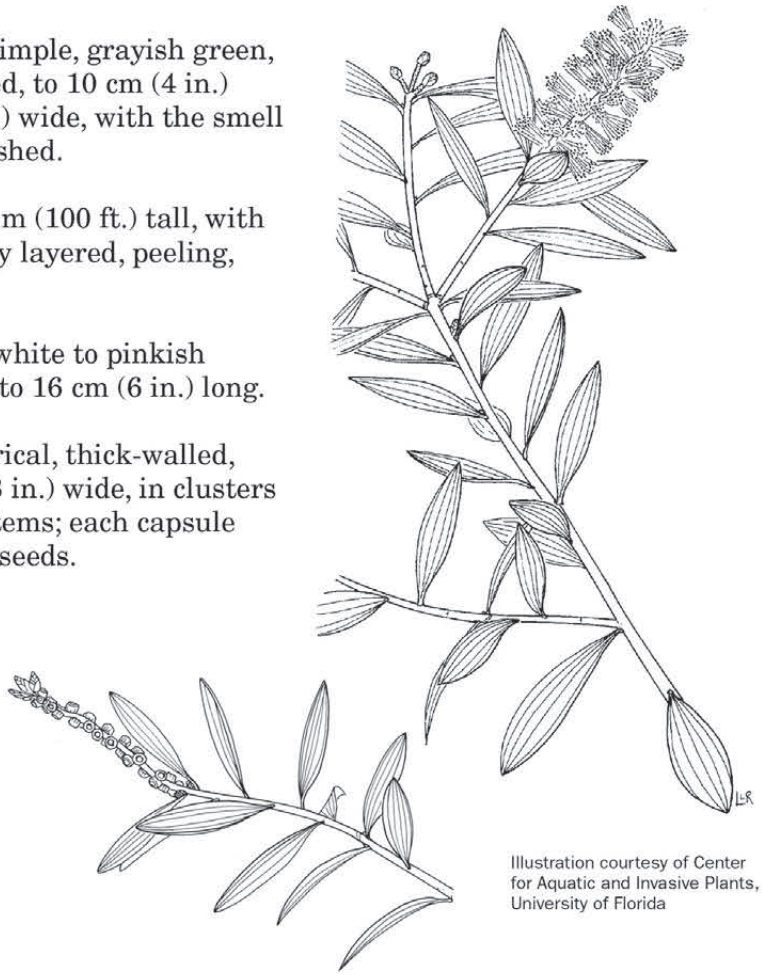

Illustration courtesy of Center for Aquatic and Invasive Plants, University of Florida

Look for first:
- papery, brownish-white bark
- stiff, lanceolate leaves
- spikes of creamy-white to pinkish flowers

Distribution

Origin in New Guinea and Australia; widely established in Central and South Florida.

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Weed alert

Creeping signalgrass *(Urochloa humidicola)*

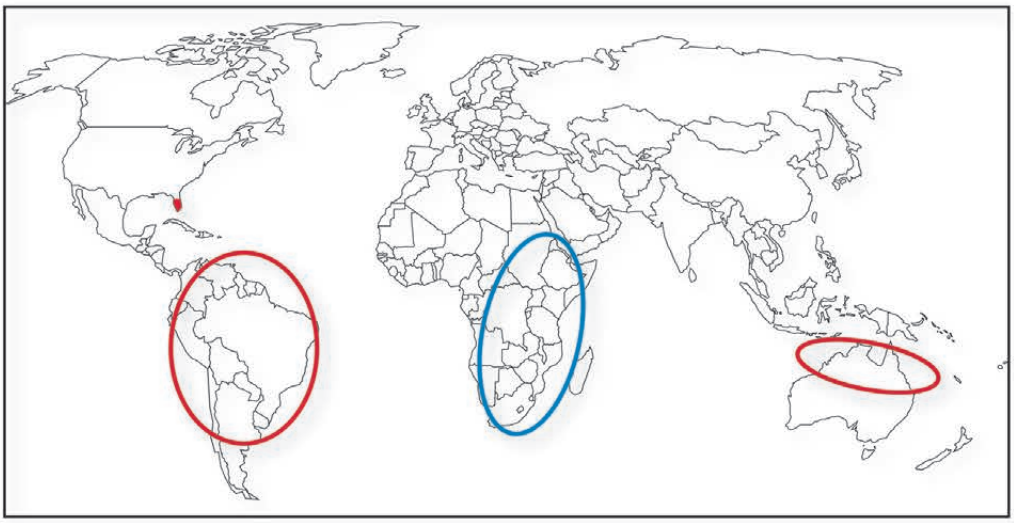
Creeping signalgrass

Creeping signalgrass, also commonly referred to as koronivia grass, is a warm season perennial grass native to Africa. Four accessions of creeping signalgrass were introduced into the USA from Swaziland and South Africa between 1964 and 1971. In Florida, the grass was tested for its forage value at several locations as recently as 1998.

In 2014, creeping signalgrass was observed reaching high densities in disturbed areas near Fort Pierce and Ona, Florida, and encroaching on natural areas. It has also been observed in the Corkscrew Regional Ecosystem Watershed. These observations suggest that creeping signalgrass may have the potential to become invasive in Florida. The purpose of this weed alert is to inform land managers about the presence of creeping signalgrass, and to ask for assistance in locating new infestations.

Distribution:

Africa (native), Australia, Central and South America and Florida (introduced).



World distribution of creeping signalgrass. Native range in blue, introduced areas in red.

Whole plant.

Inflorescence with 2 racemes.

Description

Stems: Stoloniferous, culms ascending, or decumbent; 40–100 cm long; without nodal roots, or rooting from lower nodes. Ligule a fringe of hairs.Leaf-blades linear, or lanceolate; 4–20 cm long; 3–10 mm wide.

Ligule fringed with hairs.

Inflorescence: Inflorescence composed of 2-3 racemes, borne along a central axis; unilateral; 2–7 cm long. Central inflorescence axis 2–13 cm long. Rachis wingless, or narrowly winged; angular. Spikelet packing adaxial; regular; 2-rowed.

Ecology: Creeping signalgrass grows vigorously from May to October, and flowers continuously during this period. In the cooler months, growth slows and it is reportedly sensitive to freezes. It tends to grow in nearly monospecific patches, with a thick layer of thatch accumulating under the grass. Studies in Brazil demonstrated its ability to displace native species, and it is also considered invasive in Australia. The UF/IFAS Assessment of Non-native Plants in Florida's Natural Areas has rated creeping signalgrass as having a high risk for becoming invasive in Florida.

Dense patch of creeping signalgrass. Notice thick layer of thatch.

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Small-Leaved Climbing Fern (*Lygodium microphyllum*)

LYGODIACEAE FAMILY

GROWTH HABIT

Small-leaved climbing fern (*Lygodium microphyllum*) is a twining, wiry, vine that covers trees, shrubs and many herbaceous plants. **Rhizomes** are generally shallow, branched, black, and produce new stems at the tips. Leaflets are either non-fertile or fertile and deeply lobed with sporangia on the lower surface of the lobes. **Spores** are produced year-round in the sporangia and are wind dispersed.

DISTRIBUTION IN FLORIDA

Found throughout the south and central peninsula but recently also found as far north as Jacksonville.

Table 1. Herbicide options for Small-Leaved Climbing Fern. Herbicides are expressed on a (% v/v) by product basis.
The label is the law. Always refer to product label before use.

HERBICIDE ACTIVE INGREDIENTS	PRODUCT(S)	FOLIAR
GLYPHOSATE	ROUNDUP CUSTOM, RANGER PRO, AND OTHERS	1.5-3%
METSULFURON	ESCORT XP, MSM60, OTHERS	2 oz/A
TRICLOPYR ACID	TRYCERA	1.5-2%
TRICLOPYR AMINE	GARLON 3A, ELEMENT 3A, AND OTHERS	2-3%
TRICLOPYR CHOLINE	VASTLAN	1.1-2.2%

NR= Not Recommended

NOTES SECTION

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- **Great duckweed control**
- **Excellent tank mix partner**

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Herbicide Notes for Small-Leaved Climbing Fern: SLCF vines climbing above 6-8 feet cannot be safely controlled by backpack herbicide application and must be poodle cut. All vines above the poodle cut will die without further intervention. Foliar treatment is the only recommended approach for all SLCF cover below the poodle cut. Basal bark treatment is not effective. Glyphosate has been the primary herbicide used for SLCF control. For metsulfuron, only Escort XP has a Florida 24(c) special local need label for use in freshwater marshes (sloughs, wet prairies, and sawgrass marshes), mesic forest (flatwoods and hammocks), hydric forests (flatwoods, floodplains, hammocks, and swamps), Everglades tree islands, and Everglades prairie scrub. All three triclopyr formulations are labeled for use in aquatic and upland sites.

Adjuvant Considerations: All herbicides used for SLCF control require a surfactant for optimal performance. Additionally, for glyphosate, a water conditioning agent can prevent a loss of efficacy due to hard water.

Seasonality of Treatments: Treatments are generally effective throughout the year if plants are green and actively growing. However, SLCF often experiences brownout in the late winter and early spring due to cool, dry conditions. Therefore, treatments applied when the foliage is brown will not be effective. Additionally, the brown Lygodium moth biocontrol agent can result in defoliation and patch brownout in the spring. These patches will not be controlled if sprayed when moth defoliation has occurred. Finally, SLCF ground cover may become completely inundated during the wet season and these areas cannot be controlled with foliar treatments.

Specific Hydrologic Considerations: Treatment in the late spring and early summer just prior to the wet season can be extremely effective as recovery is slower in inundated areas. However, in high water conditions, leafy growth can persist underwater for a few weeks and will not be controlled if treated when plants are submersed.

Specific Considerations for each Herbicide for Potential Non-Target Damage:

- Glyphosate is non-selective and directed sprays are recommended. It has no soil residual activity and is safe around trees that do not have thin green bark.
- Metsulfuron is injurious to many trees and native ferns. Directed applications are recommended where possible.
- All triclopyr formulations in table one are labeled for use in aquatics. These should be used carefully when standing water is present due to in-water activity and the potential for non-target damage. Additionally, triclopyr has some soil residual activity. Do not overapply when treating SLCF around the base of trees or shrubs and keep it off the bark of saplings with thin green bark.

Retreatment Interval Consideration: While foliar treatments are generally effective in controlling topgrowth, very dense patches may result in incomplete coverage and some rhizome survival and regrowth. Additionally, spore germination following treatment may result in new sporophytes within 6 months. Ideally, monitoring sites for regrowth every 6 months is ideal. However, this is often not possible and monitoring and retreatment should occur within three years at most.

Calculations for % v/v: *(Volumes must be in the same units, i.e., gallons, ounces, liters, etc).*

% v/v = (Volume of herbicide product / total herbicide plus carrier volume) * 100%

Reference Table for % v/v

% V/V	Ounces of herbicide to add for 1 gallon (128 oz) total mix size
0.25	0.32
0.5	0.64
1.0	1.28
2.0	2.56
5.0	6.4
10.0	12.8
20.0	25.6

Roasted Florida Snapper Street Tacos with Avocado Crema

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

Ingredients

- 1 pound Florida snapper fillet, skin on and bones removed
- 1/2 cup Florida avocado, diced
- 2 teaspoons taco seasoning blend, divided
- 1 lime, juiced (plus more wedged for garnish)
- 1 cup sour cream
- Florida-made hot sauce, to taste
- 1 fresh Florida chili pepper, sliced (optional)
- 2 tablespoons fresh cilantro (plus more for garnish)
- 1 head Florida romaine lettuce, shredded
- Olive oil for cooking
- 8 soft corn or flour taco tortillas, toasted
- 1 cup fresh salsa
- Sea salt and fresh ground pepper, to taste

Preparation

Preheat the oven to 375 degrees. With a sharp knife, make some cross hatches in the skin of the snapper without cutting through the meat of the fish fillet; this will keep the snapper fillet from curling up during the cooking process. Season both sides of the snapper fillet with 1 teaspoon of the taco seasoning blend. Lightly cover a sheet pan with olive oil. Place the fillet skin side down on the oiled sheet pan. Add a few chili pepper slices to the top of the snapper fillet for extra heat if desired. Place the snapper in the preheated oven and cook for 5 to 8 minutes until thoroughly cooked in the thickest part. Remove from the oven and let cool. When the snapper fillet is cooled slightly, use 2 forks to flake the snapper into chunks.

While the snapper is cooking, add sour cream, avocado, the remaining 1 teaspoon taco seasoning, cilantro, a few more slices of chili pepper if desired and half the lime juice to a blender or food processor and blend until smooth. Taste the avocado crema sauce and adjust the seasoning with salt and pepper. Remove the avocado crema from the food processor and store it in the refrigerator until ready to use.

Add the shredded romaine lettuce, remaining lime juice and a pinch of the taco seasoning blend to a small mixing bowl and stir lightly to coat. To assemble the tacos, place an even amount of the shredded lettuce on top of each toasted tortilla and top with the snapper. Add fresh salsa and avocado crema. Finally, garnish with lime wedges, Florida hot sauce and extra fresh cilantro if desired.

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Justin Nawrocki, Ph.D
Territory Manager - Aquatics

UPL NA Inc.
100 Winterberry Lane
Holly Springs, NC 27540 USA

m: +1 919 429 2185
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3205 College Ave.
Davie, FL 33314-7719

954-577-6382
954-475-4125 Fax
hlaughinghouse@ufl.edu
http://flrec.ifas.ufl.edu

CALENDAR OF EVENTS

November 16, 2023
Zoom Presentation TBD

South Florida Aquatic Plant Management Society
SPONSORSHIP OPPORTUNITIES

Become an SFAPMS **Gold**, **Silver** or **Bronze** level Sponsor!

New ways to help support your applicator run society - options to get more out of your advertising dollar!

Sponsorship Recognition	Breakfast Sponsor *(One Meeting)*	Lunch Sponsor *(One Meeting)*	Bronze Sponsor *(12 Months)*	Silver Sponsor *(12 Months)*	Gold Sponsor *(12 Months)*
Cost	$250	$750	$750	$1,000	$1,250
Recognition at Meeting	✓	✓	✓	✓	✓
Sign at Meetings	Breakfast Table	Lunch Podium	Registration	Registration	Registration
Exhibit Space at Meetings *(Table Top)*	—	✓	✓	✓	✓
Recognition on SFAPMS Website	✓	✓	✓	✓	Banner on Home Page with Hotlink
Business Card in Hydrophyte *(4 issues)*	—	✓	✓	✓	✓
One Annual Membership with SFAPMS	—	—	✓	✓	Four Memberships
Quarter Page Ad in Hydrophyte *(4 issues)*	—	—	✓	—	—
Half Page Ad in Hydrophyte *(4 issues)*	—	—	—	✓	—
Full Page Ad in Hydrophyte *(4 issues)*	—	—	—	—	✓

Hydrophyte Advertising

Quarter Page Ad (4 Issues)	$200
Half Page Ad (4 Issues)	$400
Full Page Ad (4 Issues)	$800
Business Card Ad (4 Issues)	$125

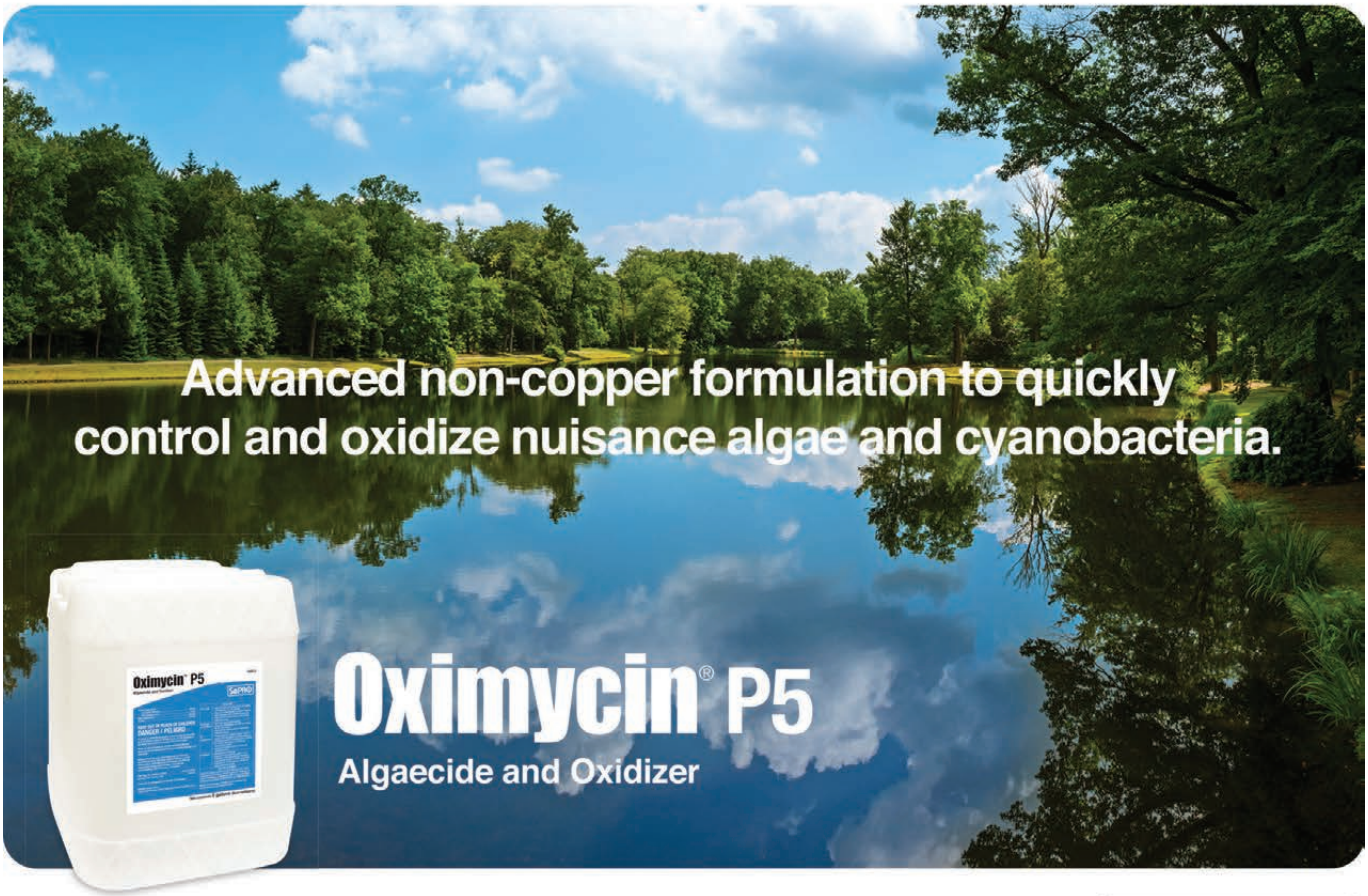
Online Payment Option Available!
WWW.SFAPMS.ORG

Additional Opportunities

General Meeting Exhibitor Package - $250

- 6' Exhibit Table at 1 General Meeting
- Recognition & Link to Your Website on the SFAPMS Website
- Post Attendee List for Sponsored General Meeting

Donation-Chil Rossbach Scholarship Fund



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Contact Florida SePRO Technical Specialists for more information: **Josh McGarry** at **813-545-3651** or **joshm@sepro.com** and **Wendi Nance** at **386-409-1175** or **wendin@sepro.com**

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- The Hydrophyte is circulated to hundreds of aquatic applicators, governmental agencies and environmental resource managers throughout the state of Florida.
- Ads in The Hydrophyte support the SFAPMS organization and brings important information to people in our industry.
- The Hydrophyte has proven to be a wise investment among industry professionals.

The Hydrophyte

South Florida APMS
6900 S.W. 21st Court
Building 9
Davie, FL 33317
www.sfapms.org