Control Methods & Status of Non-native Island Apple Snails in Southwest Alabama

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Apple Snails in Mobile County

Island Apple Snail, *Pomacea insularum*

- **Reported & documented in Langan Municipal Lake, June 2008. Incidental report 2004 cursory search found none.**
- **Likely released by aquarium (pet trade).**
- **Exotic, non-native "aquatic nuisance species" (ANS) native to S. America.**
- **Fecund- Snails mature < 1 year; females lay 1000's of eggs annually.**

Why are ANS a Problem?

- **Destoyers of wetland habitats, snails consume native aquatic plants.**
- **Destroyer of agricultural crops (e.g., rice) esp. in Southern U.S., Phillipines, SE Asia.**
- **Displace native aquatic life through competition for food, space, and habitat.**
- **Disease vector, potential carrier of: rat ringworm, intestinal fluke, rat lungworm**

Egg masses concrete wall LMP

Partnerships Toward Control

- **Alabama Division of Wildlife & Freshwater Fisheries**
- **United States Fish and Wildlife Service**
- **Mobile County Wildlife Association**
- **Alabama Department of Environmental Management**
- **Mobile Baykeepers**
- **City of Mobile, Parks & Recreation, Engineering Dept**
- **Alabama Coastal Land Trust**
- **University of South Alabama, Biology Dept.**
- **Alabama Department of Public Health**
- **Alabama Division of Marine Resources**
- **Mobile Bay National Estuary Program**

Population Control Approach

- Control adults: Apply EPA-approved chemical, copper sulfate.
- Reduce egg-laying substrate: Apply EPA-approved herbicides on emergent aquatic plants at wetted bank.
- Maintain low water levels in Langan Lake.
- Scraping of egg masses.
- Assess population changes by trapping.

Prep for copper application - BFP

Infestation Locations- SW AL

- Threemile Creek (TMC) watershed from upper pool Langan Municipal Lake (LMP) downstream through approx 8 step pools to tidal portion of Creek – empties into Mobile River!
- Blakeley Forest Pond (BFP) watershed drains to Bay Minette Creek, a major creek in Mobile-Tensaw delta system.

Site specs

- LMP = 42-acres in 2-level pools (147 acre-feet)
  - TMC: From LMP Dam to McClean Park Dam
    4.29 miles stream

    161 surface acres (59.3 acre-feet)

    8 step pools urban/industrialized channels
    Elevation drop approx 70 feet

  - TMC “Tidal” 4.67 miles to mouth at Mobile R.

    171 surface acres (366 acre-feet to I-165)

- BFP = 3.0-acres (29.4 acre-feet)

Blakeley Forest Pond, Baldwin CO (3.2 ac residential retention)

ADWFF Field Effort 2010-2011

ADWFF Field Effort, FY 2010 & 2011				
YEAR	FIELD DAYS	MAN DAYS	VEHICLE DAYS	BOAT DAYS
2010	45	71	60	28
2011	49	85	68	36

Copper treatments, 2009 - 2011

BFP - 1 “heavy” treatment Nov 2010 (189 lbs)

FISH KILL – Algae die-off, low D.O

- 7 tandem “light” copper apps (75 lbs / app ; May, Jun, Jul, Sep 2011). TOT= 714 lbs

LMP - 11 single or tandem apps (475 – 976 lbs / app ; Oct 2009 – Aug 2011). TOT= 9759 lbs

TMC - 9 single or tandem apps (393 – 2814 lbs / app ; Oct 2009 – Sep 2011), TOT= 9780 lbs

Langan Municipal Lake, copper application – air blower w hopper

Chemical Control Agents

- Copper sulfate pentahydrate, “Medium” 5-8 mm crystals (Chem One LTD). *Rate = 2.54 ppm*
- HABITAT, Isopropylamine salt of Imazapyr (BASF). *Rate = 6 pints/acre*
- AD100, Oil of Limonene & nonionic emulsifiers (Agri-alliance & Winfield LLC). *Rate = 2 pts/acre*
- RODEO, Glyphosate (Dow Agrosciences). *Rate = 6 pints/acre*
- WEEDAR 64, 2, 4-D (Nufarm Inc.) *Rate = 4 pints/acre*

Aquatic Vegetation Controlled

- Giant cutgrass (*Zizaniopsis mileacea*; 80%+ egg habitat)
- Cattail (*Typha latifolia*)
- Water primrose (*Ludwigia spp*.)
- Smartweed (*Polygonum spp*.)
- Torpedograss (*Panicum hemitomon*)
- Spikerush (*Eleocharis spp*.)
- Sedges (*Carex spp.*)
- Parrot Feather (*Myriphylum aquaticum*)
- Marsh Pennywort (*Hydrocotyle umbellata*)
- Wild taro (*Colocasia esculenta*)
- Arrowhead (*Sagittaria spp.)*

Snail egg mass on Giant cutgrass (accounts ~ 80–90% egg substrate)

Emergent Weed Apps, 2010 - 2011

BFP – NO treatments. Residents instructed how to mow, remove brush weed growth at bank edge “without” chemical use.

LMP – 5 emergent weed apps (90 – 115 Gal / app ; May 2010 – Aug 2011). TOT= 487 Gal

TMC - 12 emergent weed apps (35 – 210 Gal / app ; Oct 2010 – Sep 2011), TOT= 1254 Gal

Post-spray of emergent weeds (Giant cutgrass = “Native” plant)

Upper Threemile Creek (1 of 8 Step Pools, Elev. ~ 60')

Scraping egg masses - LMP

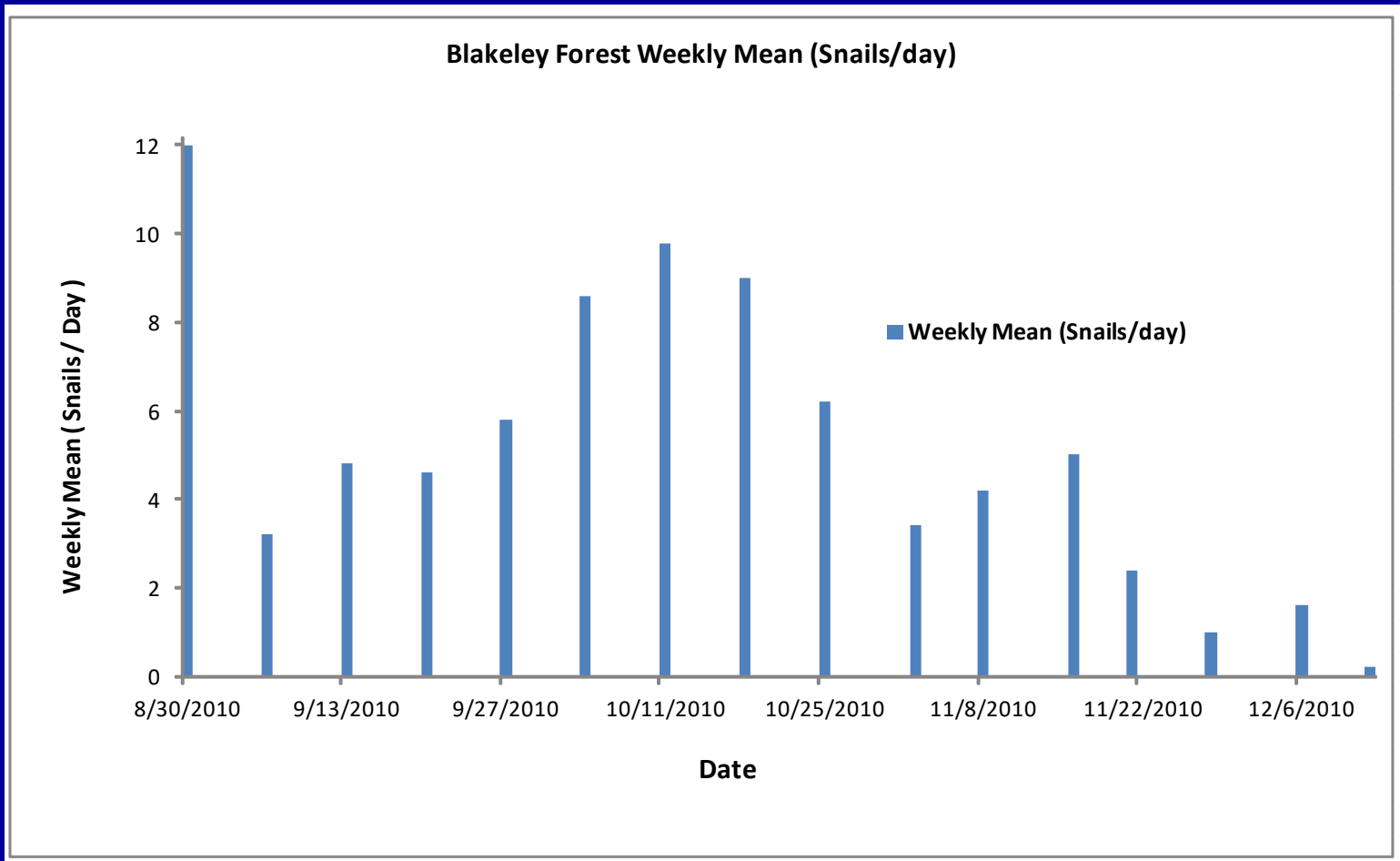
Snail trapping – pop assessment

TRAP DATA, 2009 - 2011

Apple snail trap sample data at Langan Lake, 2009 - 2011 from ADWFF, USFWS, & USA.

Year	Weeks (Period) Collected	N Traps / Week	Trap Days	TOTAL Trap Days	N Snails Collected	Trap Efficency (S/T/D)
2009	10 weeks (SEP-DEC)	20	75	1500	530	0.353
2010	17 weeks (JAN-DEC)	11 - 20	150	2359	214	0.093
2011	17 weeks (MAR-NOV)	2 - 18	211	1932	18	0.009
3	44	2 - 20	436	5791	762	

TRAP DATA, Blakeley Forest Pond



Blakeley Forest Pond trap sample data taken by local residents using 5 traps, August - December, 2010.

Summary to date

1. Repeated treatments, emergent plant control, and lower summer-fall water levels (due to below-average rainfall) appear to have substantially reduced snail abundance from Fall, 2009 (1 to 2 snails / trap-week) to Fall, 2010 (less than 0.5 snails / trap-week) based on trap data.

Snail Work for 2012-??

Partnerships forged between ADCNR, USFWS, City of Mobile, and various NGO's have helped to fund work and/or provide manpower to continue the work as mentioned above. Current funding by USFWS should allow work to continue through FY 12 at adequate level to maintain snail population at low densities.

Mobile-Tensaw Delta