

# Pablo National Wildlife Refuge

Lee Metcalf ISST

## Accomplishments

Weed Species	Total Survey Acres <sup>1</sup>	Survey Acres Infested <sup>2</sup>	Acres Treated <sup>3</sup>
Dalmatian toadflax	0	0.01	0
Hoary alyssum	0	0.005	0.005
Yellow toadflax	80.73	5.00	3.07
<b>Project Site Total</b>	<b>80.73</b>	<b>5.01</b>	<b>3.08</b>
<sup>1</sup> Area covered during the course of weed management activities regardless of presence or absence of target weed species as measured by perimeter in GIS. <sup>2</sup> Area occupied by weed species within the survey area that does not contain the space between individuals or populations (i.e. net infestation size) as measured by GPS feature for monitoring and treatment combined, but areas in common not additive. <sup>3</sup> The area or subset of infested area that has received some form of treatment as measured by GPS feature.			

## Highlights

### Schedule

Dates	Project Type	Target Species	Size of Crew	Project Notes
2-Oct-2012	EDRR Chemical Treatment	Yellow toadflax	4	Treated yellow toadflax in upland areas based only on location data provided by refuge staff.
3-Oct-2012	EDRR Inventory & Monitoring	Yellow toadflax	4	Continued surveys from previous day, however too windy to spray, therefore weeds mapped only.
4-Oct-2012	EDRR Inventory & Monitoring	Yellow toadflax	4	Continued inventory and treated yellow toadflax found, where possible (upland areas only).

### Coordination and Cooperation

- Refuge Biologist Amy Lisk provided a flash drive with shape-files of approximate locations of yellow toadflax observations used for surveys and treatment areas. In addition, Amy completed the ISST Project Checklist (Appendix A) to outline detailed instruction on herbicides, ATV use and other project specific information.

### Prevention and Education

- Suitable habitat for yellow toadflax is widespread at this refuge making containment of existing populations and prevention of new infestations a priority on this site.

### Early Detection and Rapid Response

- Although hoary alyssum and Dalmatian toadflax were not the focus of surveys conducted onsite, the Strike Team was always on the lookout to map and treat new invaders.
  - Only one patch of hoary alyssum was found and removed mechanically by hand. Given the survey was late in the season and this species is known for having multiple flushes within the same growing season, it is possible there is more hoary alyssum onsite then

what was detected. Hoary alyssum is an aggressive invader and infestations typically require multiple treatments within the same growing season to reduce and eventually eradicate it from a site. Therefore, ISST recommends this species be targeted for early detection and ongoing treatments in 2013.

- Only one Dalmatian toadflax plant was found during surveys onsite. This plant was only mapped due to the windy conditions and close proximity to water. Future surveys and treatment of this species are recommended given the limited distribution.

#### Inventory and Monitoring

- Surveys were primarily conducted along the dikes using ATV's where infestations had been seen previously by refuge staff. All areas off-road were transected on foot.
- All yellow toadflax found within the survey area was mapped. Not all detected could be treated for the following reasons: locations of plants were too close to water or under the trees/shrubs that could be harmed by herbicides used; and windy conditions during the survey period.
- Several other weeds were noted by the crew: Absinthe wormwood, bull thistle, Canada thistle, common buckthorn, common teasel, houndstongue, musk thistle, oxeye daisy, reed canary grass, Russian olive, spotted knapweed, St. Johnswort, sulfur cinquefoil, and yellowflag iris.
  - While several of these species are not listed as noxious by the state, they are known to either be aggressive invaders and/or locally problematic and are noteworthy for potential future management.
  - Oxeye daisy is a listed noxious weed that was observed in various location onsite in limited distribution and/or abundance. This species was not targeted during the surveys but may be suitable for early detection inventory and rapid response.



Pablo Reservoir and mountain views at Pablo National Wildlife Refuge. Photo by Gina Mazza.

#### Management

- Yellow toadflax appears to be well established and spreading on the project site. Open water, wetland habitats and windy conditions made treatment of upland areas difficult and precluded the use of herbicides available for several patches found. ISST recommends researching other management options like cultural methods or use of an aquatic approved herbicide to avoid potential water contamination.
  - Refuge staff requested that areas that could not be treated with herbicide be hand-pulled if possible. While mechanical removal can be effective on small, isolated plants or used to prevent seeding, it should be done with caution because it can also promote the roots to spread and expand the infestation. Based on ISST surveys, patches found were too large for hand-pulling to be an effective method of treatment for yellow toadflax.
- ISST activities were conducted point-to-point around observations of known weed populations. Although this minimizes disturbance to the site, it reduces the ability of the ISST to detect new populations before they become established on other areas of the refuge. It also dramatically limits the scope of weed mapping data for tracking invasive species population size over time and prevents the use of these data for rigorously determining effectiveness or supporting adaptive management strategies. Therefore systematic surveying of the entire management area is recommended.

## Appendix A

### Strike Team Expectation and Accomplishment Checklist

#### Arrival Interview

Station: NBR Proper and Pablo NWR

Date of Visit: week of 100112

Objectives and Priority Areas defined:

Species	Unit	Section of Unit	Inventory/ Monitor	Treat	Chemical (ref or isst)
Yellow toadflax	Pablo NWR	Entire unit thoroughly searched and treated.  Jess- The shapefile on this flashdrive is of handdrawn general location points just to give you an idea of the area where we have seen YTF and a place to start. We did have some actual data, however our server is down and I could not locate it (if it even made it there?!)	No	Yes. ATV and Backpack	Refuge – Tordon, Overdrive or Distinct & MSO (if water table and permeable soils isn't an issue)  OR  Plateau with MSO (still potential water issues but better than Tordon)  Jess- I have the Telar and Plateau in the chem shed. As well as several adjuvants, including those that can be used in aquatic settings. Some spots are closer to water than others. You will have to make the treatment call on a spot per spot basis and let me know. Pulling and cutting is also an option in areas where chemicals are inadmissible.
Yellow toadflax	NBR NWR	Same as above	No	Yes. both	Same as above

Notes: So glad you all could come up for the roundup. I hope that this info is slightly helpful and that you enjoy your week at NBR!!

ATV Use: (define whether allowed, if partial allowance any restricted areas or travel directions, including only along fence line or not, only along two-track or if can systematically traverse project site, or if point-to-point treatment) Also, if point to point treatment please determine if

you'd like a buffer around patches searched and to what distance (i.e. 50 feet around each known locations).

ATV use is acceptable. As we spoke of, please do not drive out through any un-harvested crops and avoid as much off road use as possible.

Other access issues, conflicts, etc...:

I could not print a map for you, so I am also attaching a shapefile with a handdrawn line of ONLY the back way in. You should be able to get to all the points on the map this way, although if you have time to canvas other areas the main roads and entrances should be a lot more obvious. I am not putting them on the shapefile so as not to confuse!

Station or Site Manager (or Acting): Amy Lisk Date: 9/30/12\_\_\_\_\_

## Exit Interview

Species	Unit	Section of Unit	Inventory/ Monitor	Treat	Completed (yes or no with explanation)
Yellow toadflax	NBR NWR	Area#1 – at bottom of the “amphitheater” and Area #2 - near house with barking dogs on north boundary road	No	Yes	Yes. Area #1 was thoroughly searched and only a few small desiccated plants were found and were treated. Several yellow toadflax (YTF) plants had been pulled by K. Guffey and I when we were here in Sept. In Area #2, two people searched a region along the fence-line in front of and to either side of the house but no YTF were found.
Spotted knapweed	NBR NWR	In barn and maintenance building areas.	Yes	Yes	Yes, treated spotted knapweed in this area to get rid of Milestone (so we can mix other chemical for YTF work this week). Spotted knapweed was treated until ran out of spray and then switched to monitoring and mapped spotted knapweed in the area until the end of the day.
Yellow toadflax	Pablo NWR	West area where Amy marked points to be covered and a portion of the roadways that come in from the north entrance.	Yes	Yes	Yes, treated all yellow toadflax possible. Some areas were not treatable due to windy conditions or were too close to water/wetlands to be treated. Most patches found were much too extensive to be hand pulled.
Dalmatian toadflax	Pablo NWR	With area surveyed	Yes	No	Yes, very few Dalmatian plants were observed and it's unknown to us if this is a new invader to this site or if we were just in an area with limited distribution. Plants found during yellow toadflax work were mapped but these were incidental observations only and not a through inventory of this species.
Hoary	Pablo	Within area	No	Yes	Yes. We found only a couple of

alyssum	NWR	surveyed			plants that were flowering and they were pulled and bagged. Given that this time of year is not the best for survey of this species there may be more present out there that was not detectable.
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Notes:

- Common buckthorn (*Rhamnus cathartica*) was observed in a few locations on the north side of the reservoir. While this plant is not a listed noxious weed in the state of Montana, it is known to be highly invasive and an aggressive invader in other areas. Gina from the Chicago area has dealt with this species in the past and has reported that just a few plants can quickly take over area. It spreads readily and is allelopathic, so it changes the soil chemistry enabling it to reduce/eliminate other plant competitors.
- Oxeye daisy was observed in various locations throughout the survey area. These plants were not mapped because they were not a target species this week but noteworthy since they appear to be somewhat limited in distribution and/or abundance.
- One adult and a juvenile bald eagle was observed on site. We also saw a large nest (possibly the eagles) not too far from the west dike where we were working.

Concerns with Project:

- I had a few questions on access, ATV use, keys, etc but was unable to get a hold of anyone to coordinate. Because of this we made some assumptions and decisions based on the information we had. For instance, 1)ATV use/restrictions were not clear, so we limited riding only to the dikes and all off the dike work was done on foot, 2) had some questions on access to the site with a trailer, 3)did not have keys the first couple of days, caused some delays, etc.
- Water and wind are both major issues for this site. Aquatic approved herbicide would be the safest to use since nearly all of the areas on site have shallow groundwater or is immediately adjacent to open water and/or wetlands. In addition to leeching, wind poses a threat to contaminating water through chemical drift.

Station or Site Manager (or Acting): \_\_\_\_\_ Date: \_\_\_\_\_

Compliments of the

MONTANA DEPARTMENT OF AGRICULTURE  
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HELENA, MT 59620-0201  
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## DAILY PESTICIDE APPLICATION RECORD

BUSINESS U.S. Fish and Wildlife Service	LICENSE# 101891-15
NAME Lee Metcalf Invasive Species Strike Team	ADDRESS (Refuge or WPA) Pablo National Wildlife Refuge
CITY, STATE, ZIP Stevensville, MT, 59870	PHONE 406-544-2552

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	G. Mazza	G. Mazza
Date	10/2/12	10/2/12
County	Lake	Lake
Time Start/Stop	10:00-14:00 / 14:30-17:00	14:30-17:00
Temperature	62°F / 70°F	70°F
Relative Humidity	48% / 30%	30%
Wind Speed/Direction (from)	4 -5 mph SW	5 mph SW
Pesticide Manufacturer	BASF	BASF
Trade Name	Plateau	Plateau
EPA Reg # or Formulation	241-365	241-365
Rate: Product/Diluent Per Acre	12 oz/ac	12 oz/ac
Amount of Chemical Applied	1.33 oz (3 gal mix)	0.08oz (0.1 gal mix)
Equipment Used (atv,backpack,truck,saw)	Backpack (27 GPA)	ATV Hand Gun (16 GPA)
Bio-Control (genus species)	-	-
# released / acre	-	-
Mechanical (mow,hand-pull)	-	-
Plant Phenology & Stage	Leaf-On/ Post Flowering	Leaf-On/ Post Flowering
Dominant Pest(s)	Yellow Toadflax	Yellow Toadflax
Equipment Used	-	-
Acres/Area Treated or # of plants	GPS Mapped	GPS Mapped
GPS Filename	-	-

Location #1 (Site specific description)  Started along south of dyke and worked back towards staging area (entrance gate)  Location #2 (Site specific description)	COMMENTS/MAP: (any surfactant or dye used, PUP number, concerns with weather prior or post treatment, DETAILS, etc....  Surfactant: MSO @1% by volume Dye: Highlight @ 2oz/10gal Very Gusty Wind
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BUSINESS U.S. Fish and Wildlife Service	LICENSE# 101891-15
NAME Lee Metcalf Invasive Species Strike Team	ADDRESS (Refuge or WPA) Pablo National Wildlife Refuge
CITY, STATE, ZIP Stevensville, MT, 59870	PHONE 406-544-2552

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	E. Angle and W. Schlegel	
Date	10/2/12	
County	Lake	
Time Start/Stop	10:00-17:00	
Temperature	62°F / 70°F	
Relative Humidity	48% / 30%	
Wind Speed/Direction (from)	4 -5 mph SW	
Pesticide Manufacturer	DuPont	
Trade Name	Telar XP	
EPA Reg # or Formulation	352-654	
Rate: Product/Diluent Per Acre	2 oz/ac	
Amount of Chemical Applied	0.62 oz (8 gal mix)	
Equipment Used (atv,backpack,truck,saw)	Backpack (26 GPA)	
Bio-Control (genus species)	-	
# released / acre	-	
Mechanical (mow,hand-pull)	-	
Plant Phenology & Stage	Leaf-On	
Dominant Pest(s)	Yellow Toadflax	
Equipment Used	-	
Acres/Area Treated or # of plants	GPS Mapped	
GPS Filename	-	

Location #1 (Site specific description)  Pablo site along canal  Location #2 (Site specific description)	COMMENTS/MAP: (any surfactant or dye used, PUP number, concerns with weather prior or post treatment, DETAILS, etc....  Surfactant: Spreader 90 @ 1 qt/ 100 gal Dye: Highlight @ 2oz/10gal Weather: windy
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NAME Lee Metcalf Invasive Species Strike Team	ADDRESS (Refuge or WPA) Pablo National Wildlife Refuge
CITY, STATE, ZIP Stevensville, MT, 59870	PHONE 406-544-2552

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	J. Zarate	
Date	10/2/12	
County	Lake	
Time Start/Stop	10:00-11:30	
Temperature	62°F	
Relative Humidity	48%	
Wind Speed/Direction (from)	4 mph SSW	
Pesticide Manufacturer	BASF	
Trade Name	Plateau	
EPA Reg # or Formulation	241-365	
Rate: Product/Diluent Per Acre	12 oz/ac	
Amount of Chemical Applied	1.09 oz (1 gal mix)	
Equipment Used (atv,backpack,truck,saw)	ATV Hand Gun (11 GPA)	
Bio-Control (genus species)	-	
# released / acre	-	
Mechanical (mow,hand-pull)	-	
Plant Phenology & Stage	Post Flowering	
Dominant Pest(s)	Yellow Toadflax	
Equipment Used	-	
Acres/Area Treated or # of plants	GPS Mapped	
GPS Filename	-	

Location #1 (Site specific description)  Lowest portion of dike outlined for survey  Location #2 (Site specific description)	COMMENTS/MAP: (any surfactant or dye used, PUP number, concerns with weather prior or post treatment, DETAILS, etc....  Surfactant: MSO @1% by volume Dye: Highlight @ 4oz/10gal  Ended work early because spray from wind got in my eyes, sought medical attention  GPA mixed for boom, but had to handgun spray so rate is high
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BUSINESS U.S. Fish and Wildlife Service	LICENSE# 101891-15
NAME Lee Metcalf Invasive Species Strike Team	ADDRESS (Refuge or WPA) Pablo National Wildlife Refuge
CITY, STATE, ZIP Stevensville, MT, 59870	PHONE 406-544-2552

	APPLICATION #1	APPLICATION #2
Applicator/Operator Name (s)	W. Schlegel	E. Angle
Date	10/4/12	10/4/12
County	Lake	Lake
Time Start/Stop	10:00-12:00	10:00-12:00
Temperature	45°F	45°F
Relative Humidity	59%	59%
Wind Speed/Direction (from)	2.5 mph N	2.5 mph N
Pesticide Manufacturer	DuPont	DuPont
Trade Name	Telar XP	Telar XP
EPA Reg # or Formulation	352-654	352-654
Rate: Product/Diluent Per Acre	2 oz/ac	2 oz/ac
Amount of Chemical Applied	1.67 oz (3 gal mix)	0.04 oz (0.5 gal mix)
Equipment Used (atv,backpack,truck,saw)	ATV Hand Gun (36 GPA)	Backpack (26 GPA)
Bio-Control (genus species)	-	-
# released / acre	-	-
Mechanical (mow,hand-pull)	-	-
Plant Phenology & Stage	Post Flowering	Post Flowering
Dominant Pest(s)	Yellow Toadflax	Yellow Toadflax
Equipment Used	-	-
Acres/Area Treated or # of plants	GPS Mapped	GPS Mapped
GPS Filename	-	-

Location #1 (Site specific description)  North side of refuge along access road  Location #2 (Site specific description)	COMMENTS/MAP: (any surfactant or dye used, PUP number, concerns with weather prior or post treatment, DETAILS, etc....  Surfactant: Spreader 90 @ 1 qt/ 100 gal Dye: Highlight @ 2oz/10gal Weather conditions acceptable
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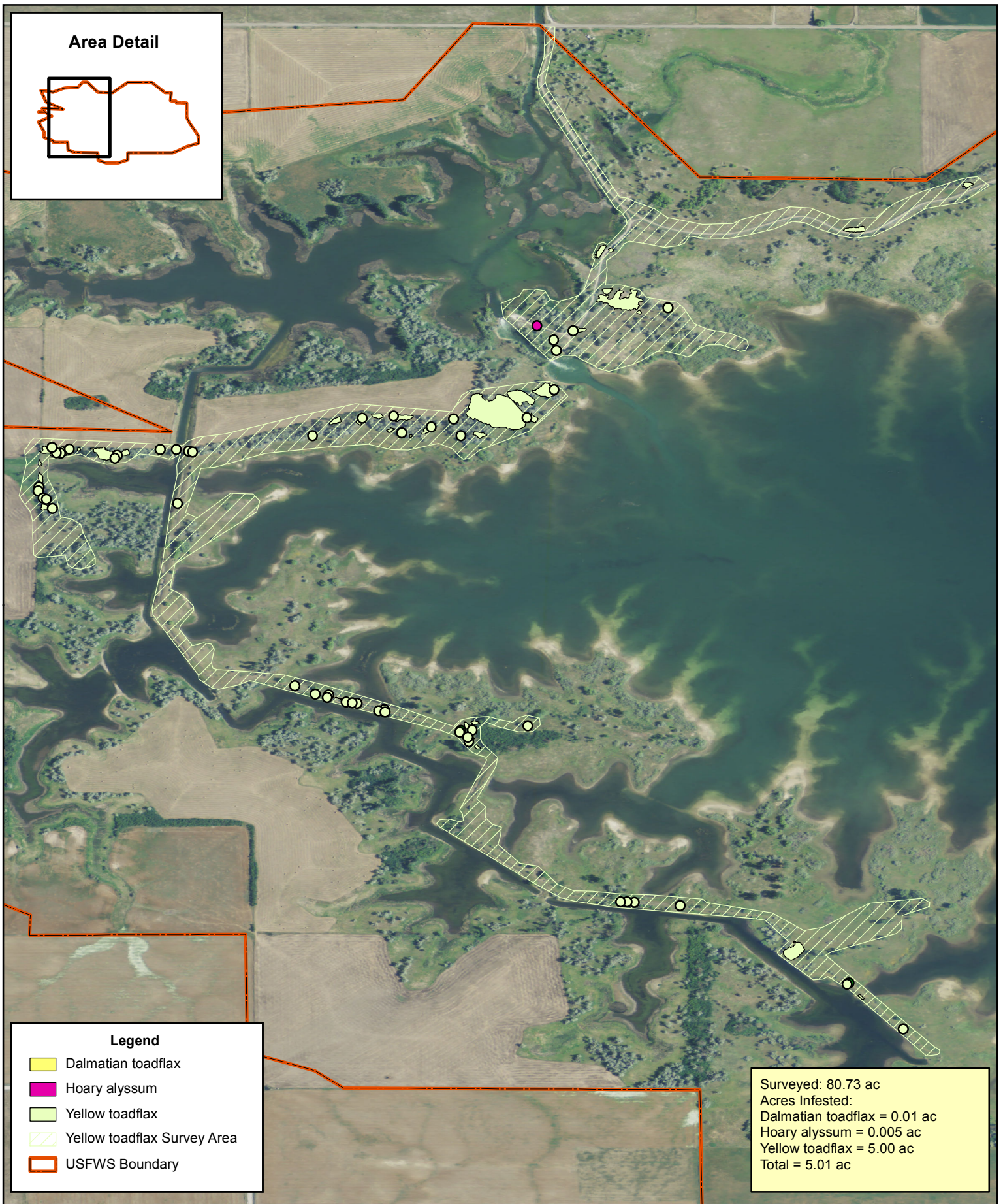
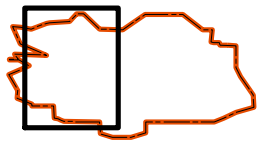


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




MOYOCO Invasive Species Strike Team

Pablo NWR - 2012 Survey Acres Infested

### Area Detail



### Legend

-  Dalmatian toadflax
-  Hoary alyssum
-  Yellow toadflax
-  Yellow toadflax Survey Area
-  USFWS Boundary

Surveyed: 80.73 ac  
Acres Infested:  
Dalmatian toadflax = 0.01 ac  
Hoary alyssum = 0.005 ac  
Yellow toadflax = 5.00 ac  
Total = 5.01 ac



0 0.125 0.25 0.5 Miles

Reference image from 2009 Montana NAIP Imagery

1 of 2 Maps



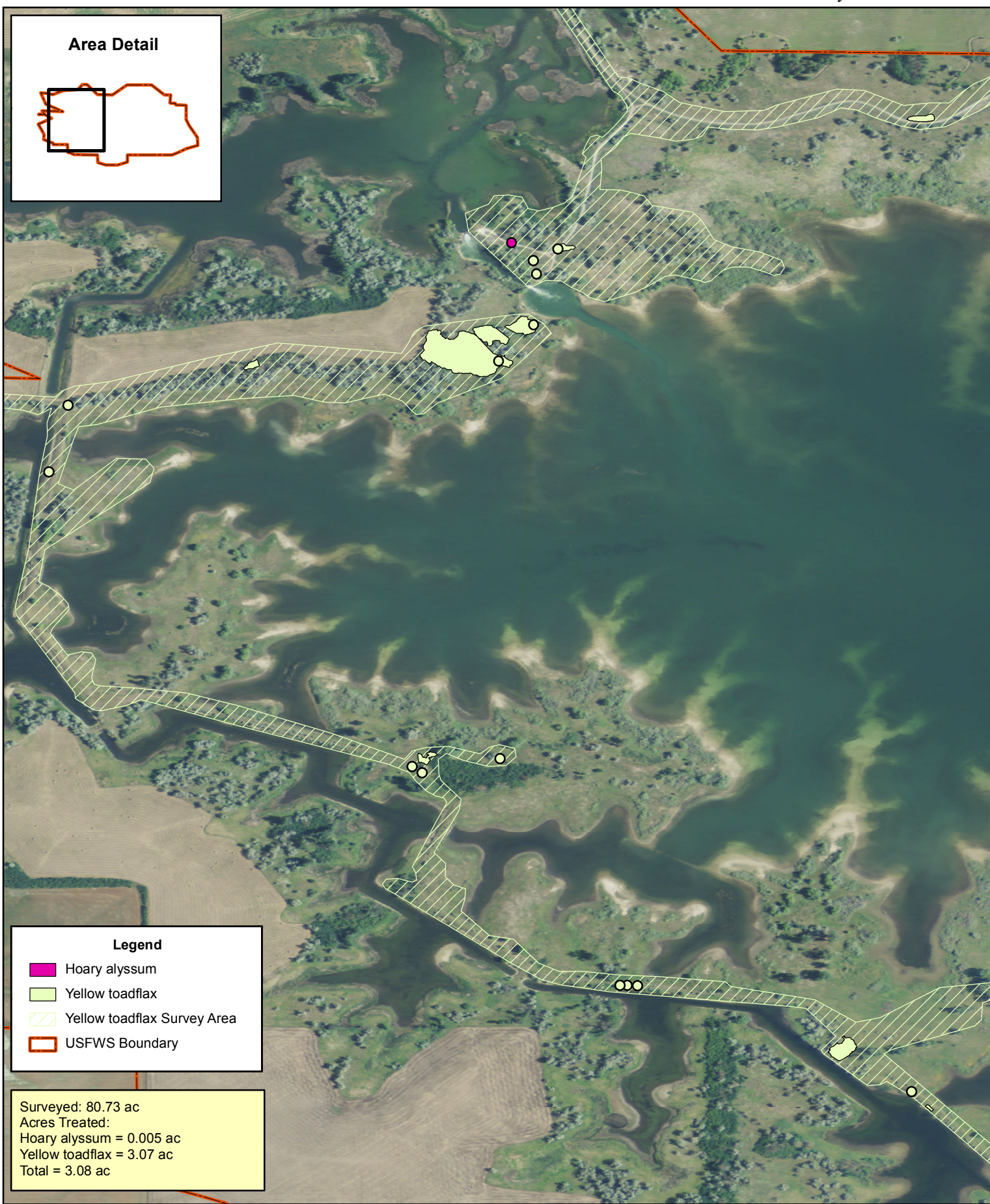
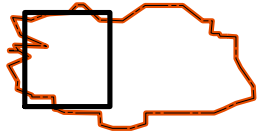


U.S. Fish & Wildlife Service

MOYOCO Invasive Species Strike Team

*Pablo NWR - 2012 Survey Acres Treated*

### Area Detail



0 0.1 0.2 0.4 Miles

Reference image from 2009 Montana NAIP Imagery

*2 of 2 Maps*