Introduction – about me

- Bachelor of Science (UMF)
  - Wildlife Biology
- Master of Science (UMF)
  - Wildlife Biology
  - GIS Certificate (UMF)
- Ph.D. Candidate (MSU)
  - Fisheries & Wildlife
  - Ecology, Evolution, Behavior
- Graduate Certificates (MSU)
  - College Teaching
  - Spatial Ecology
- Lecturer UM-Flint since 2017
- Elected positions TWS
Introduction – Erosion Control & Wildlife

- Protect the soil without harming wildlife

- Erosion Control Products = ECPs
  - Wildlife entanglement = injury/death ~ Type of ECPs
  - Ingestion of plastic & plastic pollution ~ Type of ECPs
Erosion control netting 101


https://www.emeraldseedandsupply.com/photos/JuteNet.jpg

https://www.emeraldseedandsupply.com/photos/erosioncontrol/ec_coconutblanket_m.jpg
Erosion control netting 101


Erosion Control Products = ECPs

- Spray mulches
- Netting
- Blankets
- Mats
- Wattles
- Reinforced fencing

Plastic Netting

Wildlife entanglement & death
Reptiles and Amphibians

- Eastern Fox Snake (*Pantherophis gloydi*)
- Gray Rat Snake (*Pantherophis spiloides*)
- Butler’s Garter Snake (*Thamnophis Butleri*)
- Eastern Massasauga Rattlesnake (*Sistrurus catenatus*)
Coachwhips (*Masticophis flagellum*)
Bullsnakes (*Pituophis catenifer*)
Western diamondback rattlesnakes (*Crotalus atrox*)
Racers (*Coluber constrictor*)
Ratsnakes (*Elaphe obsolete*)
Kingsnakes (*Lampropeltis getula*)
Spiny lizards (*Sceloporus magister*)

More entanglement

1. 60% of restoration sites

2. Snakes and mesh size


Testing for entrapment

Sarah Fuller video credit

https://www.youtube.com/watch?v=jLso_y1Tbz4
A struggling hawk enmeshed in landscape netting was freed by a good Samaritan

By MARY REID BARROW
CORRESPONDENT | MAY 29, 2016 AT 3:01 PM

https://www.pilotonline.com/life/wildlife-nature/article_c6725ee4-25e4-11e6-be3c-b74900fe2150.html

Photo courtesy of Randy Loftus, USFWS

Photo courtesy of Peter McGowan, USFWS
States using wildlife friendly ECPs

- California
- Illinois
- Indiana
- Minnesota
- Vermont
- Wisconsin

https://www.wildlifefriendlyfencing.com/WFF/Netting.html
California Coastal Nonpoint Source Program
Water Quality Fact Sheet

Wildlife-Friendly Plastic-Free Netting in Erosion and Sediment Control Products

Snake entangled in an erosion control blanket’s plastic netting.
(Photos by Mark Backus).

Coir mulch control netting
Close-up of jute mulch control netting

Source: Vanessa Metz
The number and diversity of species impacted is staggering.
Biology Fact Sheet

Guidelines for Use of Snake-Friendly Erosion Control Blankets

For NRCS projects in Indiana

The Threatened and Endangered snake species in Indiana that are covered by this policy presently include:

- Butler’s Garter Snake
- Copperbelly Water Snake (T)
- Eastern Massasauga Rattlesnake (T)
- Kirtland’s Snake
- Rough Green Snake
- Smooth Green Snake
- Timber Rattlesnake
- Western Cottonmouth
- Western Ribbon Snake

(T) = Federally Threatened
Minnesota DNR fact sheet

A small vole that was strangled and killed by plastic erosion control material with welded and square mesh. Photo taken in Minnesota and provided courtesy of Tom Jesse.

Plains Gartersnake trapped and killed by welded-plastic square erosion-control mesh placed along a newly installed cement culvert in southern Minnesota. ©MN DNR, Carol Hall.

Fish trapped and killed by welded-plastic square erosion-control mesh improperly placed along a small central Minnesota stream. Photo courtesy of Ben Lowe.

VTrans requires the use of wildlife-friendly ECM for all temporary ECM applications:

WILDLIFE-FRIENDLY EROSION CONTROL MATTING • THE STANDARD FOR VERMONT •

Chris Slesar, Environmental Specialist, Vermont Agency of Transportation

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Section 755 – Landscaping Materials

755.11 Erosion Matting. Is hereby modified by being deleted in its entirety and replaced with the following:

(a) Temporary Erosion Matting. Temporary erosion matting shall conform to one of the following specifications and corresponding properties found in Table 755.11A.

1) Mulch Control Netting. A temporary biodegradable rolled erosion control product (RECP) composed of planar woven natural fiber.

2) Erosion Control Blanket. A temporary all natural biodegradable rolled erosion control product composed of processed fibers mechanically bound together to form a continuous matrix.

(VTrans Standard Specifications 2009)
CONSIDERATIONS

Some erosion mat products can have detrimental effects on local wildlife. Plastic netting without independent movement of strands can easily entrap small animals moving through the area, leading to dehydration, desiccation, and eventually mortality. Netting that contains biodegradable thread with the “leno” or “gauze” weave (contains strands that can move independently) have the least impact on wildlife.

Source: Vanessa Metz, California Coastal Program

Michigan

• Since 2017, the USFWS has recommended wildlife-safe erosion control materials throughout the range of the eastern massasauga (federally threatened species)
Microplastics in water

• Sediment toxicity of bottom dwelling invertebrates
• Bioaccumulates up the food chain
• Fibers and fragments in aquatic organisms

https://labs.waterdata.usgs.gov/visualizations/microplastics/index.html#ref1
Investigation of Microplastics in Freshwater Mussels (Lasmigona costata) From the Grand River Watershed in Ontario, Canada

C. Wardlaw • R. S. Prosser


Other factors

• Dissatisfied public
  • Kids in a nature
  • Unhappy nature enthusiasts

http://www.bobseyes.net/too-much-plastic-required-for-erosion-control/
Now What?

• What we know
• What we can learn from it
• Example products & scientific literature recommendations
NOT WL friendly

• Square plastic netting that is:
  • Degradable
  • Photodegradable
  • UV-degradable
  • Oxo-degradable
  • Oxo-biodegradable

• Remove all of them when finished/don’t leave to pollute

• Usually once veg starts you should be good (promote veg growth)

https://thelawnman.co.uk/plastic-netting-in-turf-a-nightmare-for-wildlife-and-gardeners/
NOT WL friendly

- Made from:
  - Polypropylene
  - Nylon
  - Polyethylene
  - Polyester

Trinet Curlex side 1. Aspen excelsior contains standard polypropylene netting on both sides (0.5 in * 0.5 in) welded joints, heavy duty, and UV stabilized. Slopes ≤ 5H:1V, Channels 13 lb/ft² (622 Pa) shear stress, 20.0 ft/s (6.1 m/s) velocity. Seed free Permanent reinforcement, also available in natural straw/coconut, natural coconut, Recyclex synthetic fibers with the same netting. Not wildlife friendly.
NOT WL friendly

• Silt fences reinforced with metal or plastic mesh
Check erosion control areas for entangled wildlife

• Walk perimeters
• Georgia DNR rescues rat snakes:

https://content.govdelivery.com/accounts/GADNR/bulletins/1fe6657
Somewhat better products

- Mesh greater than 2.54cm
Somewhat better products

- Elongated mesh (rectangles not squares)

But you still do not need to use the polypropylene products because......

Curlex I. Aspen excelsior contains standard polypropylene netting on one side (2 in * 1 in) welded joints, oxo-biodegrader, and UV additives. Slopes ≤ 2H:1V, Channels 1.75 lb/ft² (84 Pa) shear stress, 7.0 ft/s (2.1 m/s) velocity. Seed free. Somewhat wildlife friendly.
Wildlife friendly ECPs

• 100% biodegradable materials

Choose the product with FibreNet instead!

Curlex I. Aspen excelsior contains FibreNet netting on one side (1in * 0.5 in) jute with moveable joints. Slopes ≤ 2H:1V, Channels 1.75 lb/ft² (84 Pa) shear stress, 7.0 ft/s (2.1 m/s) velocity. True biodegradable, seed free. Mowable 90 days. Wildlife friendly.
Wildlife friendly ECPs

- Loose weave
- Non welded
- Movable joints
- Labeled leno or gauze
- Made from natural materials
- Can leave = biodegradable

Wildlife friendly ECPs

• Natural fiber with no netting

Curlex NetFree. Aspen excelsior contains no netting. Slopes ≤ 3H:1V, Channels 1.0 lb/ft² (48 Pa) shear stress, 3.0 ft/s (0.9 m/s) velocity. True biodegradable, seed free. Wildlife friendly.
Curlex II. Aspen excelsior contains FibreNet netting on two sides (1in * 0.5 in) jute with moveable joints. Slopes ≤ 1.5H:1V, Channels 2.25 lb/ft² (108 Pa) shear stress, 9.0 ft/s (2.7 m/s) velocity. True biodegradable, seed free. Mowable in 90 days. Wildlife friendly.

Curlex III. Aspen excelsior contains FibreNet netting on two sides (1in * 0.5 in) jute with moveable joints. Slopes ≤ 1H:1V, Channels 2.5 lb/ft² (120 Pa) shear stress, 10.0 ft/s (3.1 m/s) velocity. True biodegradable, seed free. Mowable in 90 days. Wildlife friendly.
Wildlife friendly ECPs

- Bury edges of blankets and mats
- Buried edges help prevent WL from getting under the blanket/mat
Wildlife friendly ECPs - Spray on mulch

- Using too much = slows native plant germination
- Using too little = failure
- Toxicity reports show they are not harmful for fish

Wildlife friendly ECPs - Native vegetation & stakes

## Conclusion

<table>
<thead>
<tr>
<th>Wildlife Friendly</th>
<th>Less Risk to Wildlife</th>
<th>Not Wildlife Friendly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural fiber netting or no netting</td>
<td>Elongated mesh netting</td>
<td>Square plastic netting that is:</td>
</tr>
<tr>
<td>100% biodegradable materials</td>
<td>Mesh &gt; 2.54 cm</td>
<td>Degradable</td>
</tr>
<tr>
<td>Loose weave, non-welded, movable jointed netting (leno or gauze)</td>
<td></td>
<td>Photodegradable</td>
</tr>
<tr>
<td>Secure ECPs with wooden stakes or live stakes</td>
<td></td>
<td>UV-degradable</td>
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<tr>
<td>Bury edges of blankets &amp; mats</td>
<td></td>
<td>Oxo-degradable</td>
</tr>
<tr>
<td>Remove ECPs when no longer needed</td>
<td></td>
<td>Oxo-biodegradable</td>
</tr>
<tr>
<td>Spray on mulch</td>
<td></td>
<td>Made from:</td>
</tr>
<tr>
<td>Seed &amp; plant native vegetation</td>
<td></td>
<td>Polypropylene</td>
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<td></td>
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<td>Nylon</td>
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<td></td>
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<td>Polyester</td>
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<td></td>
<td></td>
<td>ECPs left longer than needed</td>
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<td></td>
<td></td>
<td>Silt fences reinforced with metal or plastic mesh</td>
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</tbody>
</table>
Actions you can take

Use wildlife friendly ECPs

Update standards & policies:
Promote wildlife friendly ECPs
Do not use plastic netting
Collaborate & reach out to change policy!

Example Language for a Local Coastal Program Update

- The Coastal Commission Water Quality Program’s model water quality component of an LCP update:

  Avoid plastic netting in temporary rolled erosion and sediment control products. During construction, development shall avoid the use of temporary rolled erosion and sediment control products (such as fiber rolls, erosion control blankets, and mulch control netting) that incorporate plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers), to minimize wildlife entanglement and plastic debris pollution. Acceptable alternatives include the following:

  1. *Loose-weave natural fiber netting.* Temporary rolled erosion and sediment control products with netting made of natural fibers, constructed in a loose-weave design with movable joints between the horizontal and vertical twines.

  2. *Erosion control products without netting.* Temporary rolled erosion and sediment control products that do not contain netting, including net-less erosion control blankets (e.g., made of excelsior), loose mulch, hydraulic mulch, soil binders, and straw bales.

  3. *Unreinforced silt fences.* Silt fences constructed of woven synthetic filter fabric; however, avoid the use of reinforced silt fences backed by plastic or metal mesh.

Things to help you

• This webinar

• More information:
  • White paper
  • One page fact sheet

• Table of wildlife safe products
  • various conditions (slope, etc) that are wildlife friendly from multiple manufacturers

• What else could we do to make this easier?
THANK YOU!!!

- Carrie Tansy
- Jessica Pruden
- Shaughn Galloway
- Michigan Field office
- Jeff Grabarkiewicz & Kelsey Buchmayer; MDOT
- Directorate Fellows Program
Discussion

• If we don’t get to your question today, we can make a note and get back to you!

• Contact:
  • Melissa_Starking@fws.gov
  • Carrie_Tansy@fws.gov

• Website:
  • https://fws.gov/midwest/eastlansing/ecp.html