Mussel tagging methods

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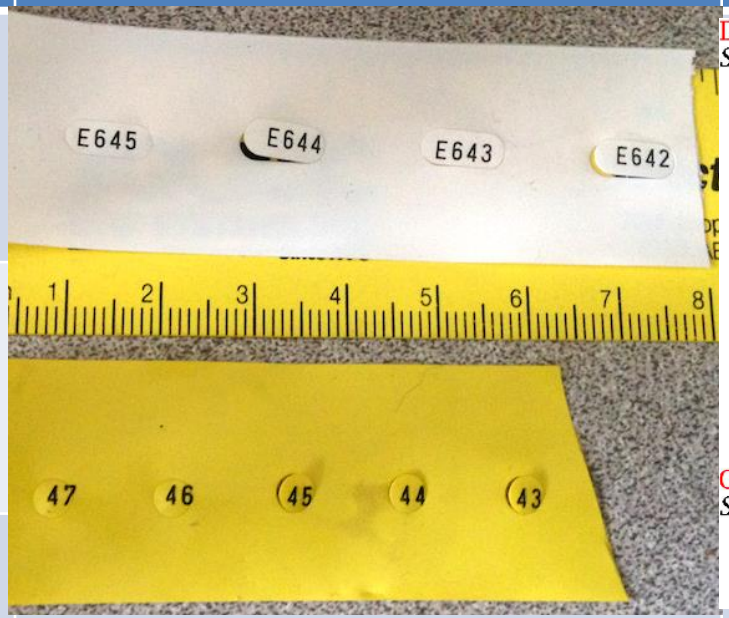
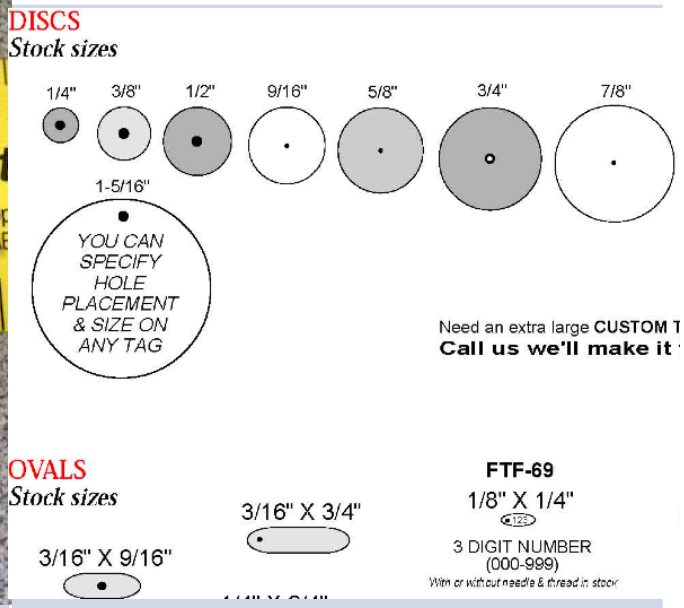
Outline

- Importance of tagging mussels
- Tags and tagging methods
- Comparison of tagging results and discussion
- Recommendations

Importance of tagging mussels

- Important biological method for monitoring program
- Study mussel life history traits,
    - Survival
    - Growth
    - Movement and Migration
- Study individual variations
- Estimate population growth
- Collect data for demographic analyses for the purpose to make management decision.

Tags and tagging methods

Tag types	FPN glue-on shellfish tags	Floy Shellfish Tags
Producer		
For mussels (> 15 mm)		
For mussels (10 -15 mm)		http://www.floytag.com

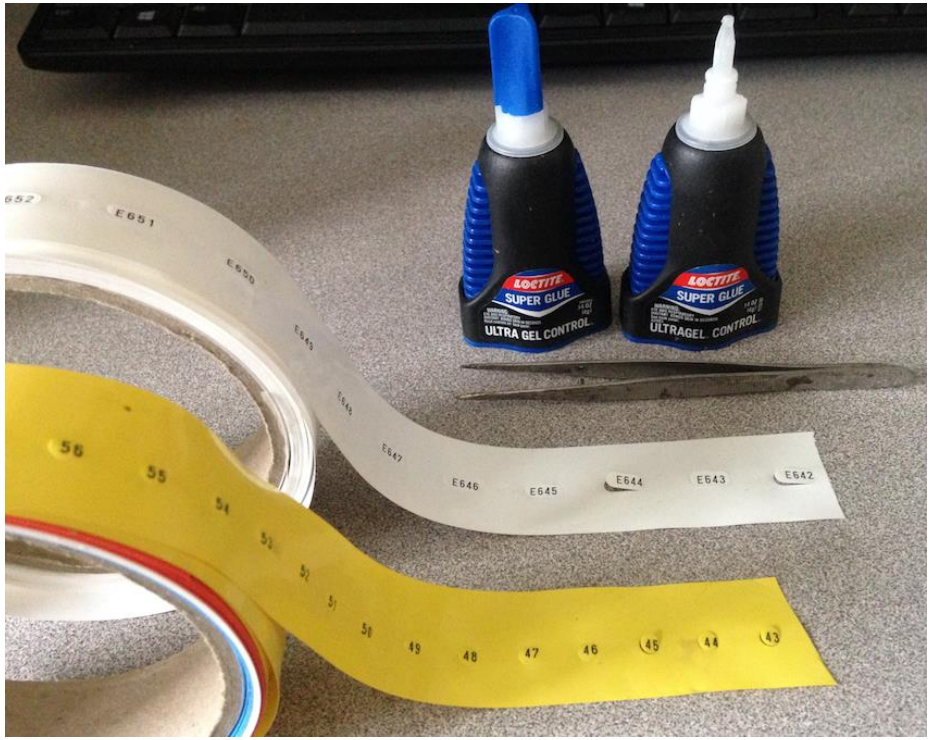
Tags and tagging methods (cont.)

- Bee tags (The Bee Works, Ontario, Canada)
  - http://www.beeworks.com
  - Number 00-99 in different colors
  - Tag size: 2 mm
  - For Juvenile mussels (> 5 mm)

Tags and tagging methods (cont.)

- Tagging kits

  - Loctite Gel Superglue
  - Forceps



Tags and tagging methods (cont.)

Photos - from Todd Fobian

Tags and tagging methods (cont.)

- **Tagging of Hallprint tags (Alternative)**

4. Place a layer of Superglue on a flat spot of mussel
5. Place a tag onto each mussel using forceps
6. Press tag to make sure the connection b/w tag and mussel
7. Dry for 2-3 min

Tags and tagging methods (cont.)

*Margaritifera margaritifera*_Photo from Frankie Thielen


17
18
19
1418
1417
1416

Tags and tagging methods (cont.)


Missouri State University


b001 b020 b040 b059 b078 b097 b115 b133 b152 b171 b190
b002 b191
b003 b192
b004 b193
b005 b194
b006 b195
b007 b196
b008 b197
b009 b198
b010 b199
b011 b200
b012 b201
b013 b202
b014 b203
b015 b204
b016 b205
b017 b206
b018 b207
b019 b039 b058 b077 b096 b114 b133 b151 b170 b189 b208
Photo - from Monte McGregor

Tags and tagging methods (cont.)

- Scratch and laser tags
  - Scratch marks on mussel using sharp tools
  - Laser tags

Photos - from Haibo Wen

Tags and tagging methods (cont.)

- Scratch and laser tags
  - Scratch marks on mussel using sharp tools
  - Laser tags

Photos - from Chris Barnhart

Tags and tagging methods (cont.)

- No number tags
  - Plastic pieces of various colors
  - Sharpie mark for short term
  - Superglue dots + accelerator

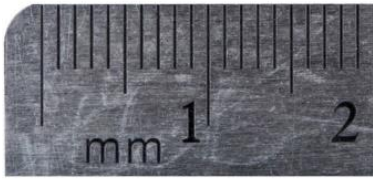
Photo from Monte McGregor

Tags and tagging methods (cont.)

Photos - from Chris Barnhart

Tags and tagging methods (cont.)

- Bulk PIT tags (Biomark, Idaho, *http://www.biomark.com*)
- Size (12.5 X 2.1 mm):134.2 kHz ISO HDX.
- Detecting devices:
  - Portable BP antenna
  - Reader-IS1001




CAUTION
DC
ONLY
Biomark
MTS/MC
1
2
3
Back
Reset
System Ready
Tag Detected
IS1001-MC™
Multiplexing Transceiver System
Master Controller

Tags and tagging methods (cont.)

- Tagging of PIT tags

1. Mussels size: > 20 mm
2. Clean the mussel surface
3. Place a thin layer of superglue on a flat spot of mussel
4. Place PIT tag on the mussel
5. Cover PIT tag with dental cement
6. Complete process in <2 min, and in the shade under field conditions to reduce stress.

Fuji, Japan

Medental INT USA

Glass Ionomer Luting Cement

Tags and tagging methods (cont.)

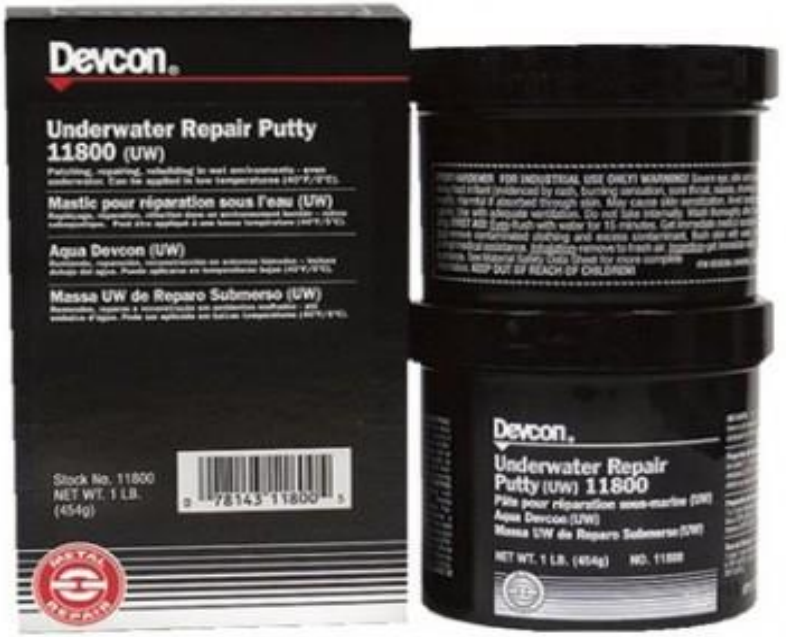
- Tagging *Epioblasma florentina walkeri*

Tags and tagging methods (cont.)

- Tagging of PIT tags

1. Use marine epoxy (Devcon 11800) to affix PIT tags *(Illinois Natural History Survey)*
2. Prefer lighter application of marine epoxy

Photo-



Tags and tagging methods (cont.)

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Tags and tagging methods (cont.)

Comparison of tagging results and discussion

Tagging methods	Retention rate (%)	Recapture rate (%)	Comments
Glue cover on the Hallprint tags	96% (4 yrs +)		Concerns on readings of tag numbers
Glue – not cover on the Hallprint tags	Various		Concerns on discoloration
Floy tags			Hole function
Scratch and laser tags	100%		
PIT tag – dental cement PIT tag – marine epoxy	100% (2 yrs)	98% (2 yrs) 25% - 100%. (60-80%)	Concerns on long-term retention rates

Recommendations

- The purpose of tagging
- Use proper tags and apply proper tagging methods
  - To monitor the life history traits for individual mussels: tags with ID
  - To monitor the characteristics of cohort or population of mussels: tags without ID
  - Recapture rates are the most important for monitoring program
  - Suggest to use PIT tags in monitoring program for parameter estimation if the budget allows

Thanks and questions