Invasive Species 2016-17 Captains' Tryouts
Names: ____________________________
Score: ______/108

NOTE: ONE SECTION OF THIS TEST REQUIRES A CALCULATOR

Section 1:

a. Identify the genus and species: ____________________________ (1 pt)
b. Explain how and why this species was introduced to America: (2 pts)

c. Explain why this species is especially dangerous to animals: (2 pts)

d. Although this species has harmful effects, explain its possible economic benefits: (2 pts)

Section 2

a) What is the common name of this specimen? (1 pt)
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b) What type of inflorescence does this plant have? (3 pts)

c) What other species on the invasive species list also has this inflorescence type? (2 pts)
   i) Scotch thistle
   ii) Whitetop
   iii) Japanese Spirea
   iv) Multiflora Rose
   v) None of the above

d) Why is it especially important that one avoids skin contact while handling this plant? (4 pts)

Section 3

Cornelius took a survey of the aquatic fauna in Boston Harbor with these results:

<table>
<thead>
<tr>
<th>ANIMAL</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clubbed tunicate</td>
<td>5,051</td>
</tr>
<tr>
<td>Blue Mussels</td>
<td>400</td>
</tr>
<tr>
<td>Scallops</td>
<td>242</td>
</tr>
<tr>
<td>Rock crabs</td>
<td>20</td>
</tr>
<tr>
<td>Harbor seals</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3715</strong></td>
</tr>
</tbody>
</table>

1. Calculate the Simpson’s Index of Diversity of the area to the nearest hundredth. (4 pts)

\[ D = 1 - \left( \frac{\sum n(n-1)}{N(N-1)} \right) \]

   \( n = \) the total number of organisms of a particular species
   \( N = \) the total number of organisms of all species

2. If the clubbed tunicate population were drastically reduced, would the index of diversity increase or decrease? What exactly would that indicate? What changes and what doesn’t in terms of biodiversity? (hint: try to include vocabulary/key phrases that have to do with species diversity) (6 pts)
Section 4:

1. Identify the common name of this specimen. (1 pt)

2. What is unique about its mode of life? (1 pt)

3. Is this plant annual or perennial? (1 pt)

4. Attempts at treatment include forcing “suicidal germination.” How is this done, and why or why not is it effective at treating this plant? (5 pts)

Section 5:

Match each term with the phrase that is best associated with it (1 pt each):

<table>
<thead>
<tr>
<th>a) damages plants in the genus Opuntia</th>
<th>1) mymaridae</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) European brown-tailed moth was an attempt at biological control</td>
<td>2) Pyralidae</td>
</tr>
<tr>
<td>c) Spends part of life cycle in water</td>
<td>3) New Zealand mud snail</td>
</tr>
</tbody>
</table>
### Section 6:

1. What were acclimatization societies and what was their goal? How have they contribute to the spread of invasive species? (3 pts)

2. Niche overlap is a common indicator of potential competitive exclusion and impact of invasive species. What is a niche and describe an example of an invasive species that competitively excludes another from a niche in common? (2 pts)

3. What is a ruderal species? Why do they tend to become invasive? (2 pts)
4. What is the classification of insecticides that halt the chemical acetylcholinesterase from facilitating electrical signals between nerve cells and degrades rapidly in sunlight exposure? (2 pts)

5. Define the enemy release hypothesis. (2 pts)

6. Why might it be easier for a species to become established on an island? (2 pts)

Section 7:

1. Which of these has not had a fictional book/movie/song written about it? (1 pt)
   a. Northern snakehead
   b. Princess tree
   c. Giant Hogweed
   d. Spotted knapweed

2. Which of these plants doesn't belong in the same family as the others? (1 pt)
   a. Downy brome
   b. Medusahead
   c. Common reed
   d. Common buckthorn

3. What does CBD stand for? (2 pts)

4. Define zoochory. (2 pts)

5. The EPA estimates that about how many invasive species are in the United States? (1 pt)

6. Whom does the Lacey Act allow to regulate the importation and transport of species? (1 pt)

Section 8:
1. What is the scientific name of this species? (1 pt)

2. Where is it native to? (1 pt)

3. How often can females reproduce? (1 pt)

4. This fish preys on other marine animals that are considered ecologically and/or economically important. List one of these animals. (1 pt)

5. True/false (circle one): a sting from a lionfish is usually fatal. (1 pt)

6. Which other aquatic animal on the invasive species list also is venomous? (1 pt)

Section 9:

1. What is the common name of this species? (1 pt)

2. Why is mowing alone not considered an effective treatment option? (2 pt)

3. Biological control for this plant mostly comes from which taxonomic order of insects? (1 pts)

4. One plant can produce about how many seeds annually? (1 pt)

5. Name a plant that has been negatively affected by this species. (1 pt)
6. If this species crowds out a wetland area, what damages will be done to the area? (2 pts)

Section 10:

1. Identify the common name of the invasive species. (1 pt)

2. Has this disease been recorded in humans? (1 pt)

3. How do humans spread this species? (1 pt)

4. Name three bat species (common or scientific name) that have been affected. (3 pts)

5. What is the maximum temperature for this species to grow? (1 pt)

6. This disease only affects bats that do what behavior? (1 pt)

Section 11

1. Which invasive species is pictured here? (common name) (1 pt)

2. In which state was this species introduced? (1 pt)

3. This invasive species can only infect plants when they (invasive) are in what life cycle stage? (1 pt)

4. When the female nematode dies, it becomes easier for fungi to invade the root system. Name one of these fungi. (1 pt)

5. The small specks on the root of the pictured plant are which gender of this invasive? (1 pt)
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6. Without help from machinery, wind, animals, etc. about how fast can this species move through the soil on its own power? (Doesn’t have to be an exact number) (2 pts)

Section 12

A

B

1. Which of these is a zebra mussel? Which one is a quagga mussel? (1 pt)

2. Which is tolerant of colder temperatures? (1 pt)

3. How have these species spread to the United States? (1 pt)

4. Specimen A is known to make the water clearer by eating almost all of its plankton, which in turn has allowed sunlight to deeper penetrate into the water, which has made it easier for Eurasian Watermilfoil to become established and invasive. What is the name of this phenomenon when an invasive species facilitation the invasion of another non-native species? (1 pt)

5. About how many days of aerial exposure can specimen B survive? (1 pt)

6. One preventative measure is coating underwater surfaces with what, so that these species cannot grow on them? (1 pt)

Section 13
1. Identify the common name of this species. (1 pt)

2. How do the invasive, non native plants reproduce? (1 pt)
   a. Asexually, using stolons
   b. Sexual reproduction by forming gametes
   c. Asexually, through fragmentation
   d. A and C
   e. All of the above

3. How does this species damage the environment? (2 pts)

4. Where was this species first discovered in the United States? (1 pt)

5. What taxonomic order does this plant belong to? (1 pt)

6. Why is it necessary to take precaution when cutting down these plants? (2 pts)