Animal Allies
Robot Game
What’s Allowed

• 1 EV3, RCX or Controller

• 4 Motors
What’s Allowed

As many of the following external sensors as you like:

- EV3 TOUCH
- EV3 COLOR
- EV3 ULTRASONIC
- EV3 GYRO/ANGLE
- NXT TOUCH
- NXT LIGHT
- NXT COLOR
- NXT ULTRASONIC
- RCX TOUCH
- RCX LIGHT
- RCX ROTATION
What’s Allowed

- Regular LEGO Elements (non-electric)

MINDSTORMS® /TECHNIC/DUPLO®/BIONICLE™/STAR WARS™/ HARRY POTTER™/etc
What’s not allowed

• Modified parts
• Purchased pull-back and go motors
• Purchased wind-up motors
• Power-functions
• Glue, tape, oil, paint, etc.
• 5th motor (In the Competition Area)
A FEW EXCEPTIONS

• **Exception 1:** You may reference a paper list to keep track of robot programs.
• **Exception 2:** LEGO string and tubing may be cut to length.
• **Exception 3:** Marker may be used only in hidden areas, for ownership identification.
• **Exception 4:** Carts, trays, and boxes may be used for carrying and storing your equipment, off the table only.
Software and Awards

• Software – The robot may only be programmed using LEGO MINDSTORMS, RoboLab, NXT-G or EV3 software (any release)
• No other software is allowed
• If your team is in violation, they will not be allowed to compete.

[Image of Animal Allies logo]
SERIOUS CHANGES FOR 2016 (All are the effects of simplifications.):

- There is no “Safety” region now. The whole quarter-circle region is all Base. The inner curved line is meaningless now.
- The ceiling of Base has been removed, so there is no limit on how tall a Launching Robot may be.
- Transported objects partly in Base when the Robot is Interrupted are always given to the Ref, out of play.
- Stranded objects partly in Base are always given to the Ref, out of play.
- On-Field Storage outside Base no longer allowed.
- If the Robot is Interrupted Transporting an object not completely in Base, the Ref now keeps that object no matter what.
- There is no “Junk” penalty.
- Local Head Referee responsibility is enhanced.
- The “Benefit Of The Doubt” rule is strengthened.
Missions
# Shark Shipment

**EXACT SCORING REQUIREMENT OPTIONS:** • Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>Points</th>
<th>Bonus Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Completely in Target 1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Completely in Target 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Added only if a Target Score is earned) Shark is touching only the tank floor and no wall</td>
<td></td>
</tr>
</tbody>
</table>

• **More:** After Launch for this Mission, nothing is ever allowed to touch the Shark except the Tank.
Service Dog Action

Drive past the visually impaired man, and the dog will do her job.

- Visible at the end of the match: The Warning Fence is down
- **More:** The Fence must be down because the Robot completely crossed it from the west, after traveling between the Barriers

**Points**

15
Animal Conservation

Work with the other team to unite identical animals. Every pair united will score for BOTH teams, no matter who worked on that union.

- **Before the Match starts**, hand-place your choice of one animal in your tray of the Animal Conservation Mission Model. The placement must match one of these *options:
  - Reindeer facing west
  - Gorilla facing south
  - Bat facing south
  - Flamingo facing east
  - Frogs facing east & west

- **During the Match**, participating Robots make the trays switch places. A switch is officially successful when the red axle causes the system to stop. Robots then have the option of removing the received animal and replacing it with a different animal for switching. The Referee resets the red axle.

*The five optional animals listed in this mission are the only ones allowed for exchange.*
Animal Conservation (cont.)

EXACT SCORING REQUIREMENTS:

- Visible at the end of the match:
  - Two identical animals are completely on the same **Side**
  - Both teams get points for all pairs.
- More: Each pair must be created through rotation of the Animal Conservation Mission Model:

**For M03, a “Side” is anywhere completely south of the symmetric line between Fields, including that Field’s Storage areas.**

**Points**

20

For Each Team per Pair of Animals
Feeding

Deliver food from the Refrigerator to Target Animal Areas.

EXACT SCORING REQUIREMENTS:
• Visible at the end of the match:
  ○ A piece of Food is completely in a Target Area

Points

10
For Each Piece

• More: If multiple pieces of Food are in one area, all must match each other
Biomimicry

Test our ability to mimic the Gecko’s “stickiness” by placing the White (mechanical) Gecko on the Biomimicry Wall, and/or by seeing if the Robot itself can get onto the wall.

- Visible at the end of the match: The Biomimicry Wall completely supports:

- **More:** For an object to score, no part of it may be in contact with anything but the Biomimicry Wall and/or Green Gecko, except two scoring objects may be in contact with each other.
Milk Automation

Guide the cow into the machine, then spin the machine until Milk comes out. If you spin too far, *Manure also comes out!

- Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Milk and Manure have all rolled out</td>
<td>Milk has all rolled out, but not the Manure</td>
</tr>
</tbody>
</table>

- **More:** The Robot’s only movement of the Milk and/or Manure came by moving the red lever:
Panda Release

Convert the Panda’s scene from facility care and observation to open wilderness.
- Visible at the end of the match:

10
Points

The Slider looks fully open clockwise
Camera Recovery

Go get the camera and bring it to Base.

- Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Camera is completely in Base</td>
<td></td>
</tr>
</tbody>
</table>
Training and Research

Move the Dog & Trainer, Zoologist, and/or Manure Samples to the Training & Research Area.

- Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>The Dog &amp; the Trainer are completely in the Training Research Area</td>
</tr>
<tr>
<td>15</td>
<td>The Zoologist is completely in the Training and Research Area</td>
</tr>
<tr>
<td>5 each</td>
<td>Manure *Samples are completely in the Training and Research Area</td>
</tr>
</tbody>
</table>

- **More:** Only one Manure Sample may be Transported at a time

*Only disc-shaped Manure counts as Samples.*
Bee Keeping

Place the Bee on the Beehive and get the Honey out.

- Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>The Bee is on the Beehive and there is no honey in the Beehive</td>
</tr>
<tr>
<td>15</td>
<td>The Bee is on the Beehive and the Honey is completely in Base</td>
</tr>
</tbody>
</table>
Prosthesis

Fit the Prosthesis where the legs of the Pet (Our Little Friend) should be, and send the Pet to its place on the farm.

- Visible at the end of the match:

<table>
<thead>
<tr>
<th>Points</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>15</td>
</tr>
</tbody>
</table>

9  The Prosthesis is fitted to the Pet AND not held by the Ref

15 The Prosthesis is fitted to the Pet AND the Pet is completely in its Farm Target
Seal in Base

Visible at the End of the Match:
- Seal is completely in Base and Not Broken

Points
1
Milk

**Milk in Base:** Visible at the end of the Match
- Milk is completely in Base

<table>
<thead>
<tr>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Milk in Ramp:** Visible at the end of the Match

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>All Three Milk are completely supported by the Ram</td>
</tr>
<tr>
<td>3</td>
<td>All three Milk are completely supported by the Ramp, AND they’re the only things supported by the Ramp, AND they’re the only things touching the Ramp</td>
</tr>
<tr>
<td>4</td>
<td>4 Points  All three Milk are completely supported by the Ramp, AND they’re the only things supported by the Ramp, AND they’re the only things touching the Ramp, AND they’re all standing</td>
</tr>
</tbody>
</table>
All Samples

Visible at the end of the Match:

Points

5

All Seven Manure Samples are completely in the Training and Research Area
Penalties

**Interruption Penalty** – Caused by you interrupting the Robot while it is not completely in Safety

**Before the match starts**, the Ref removes five Manure Samples from Base, and holds on to them, leaving five still there. If you Interrupt the Robot, the Ref places one of the removed Samples in the white triangle, in the southeast, as a permanent/untouchable Interruption Penalty. You can get up to five such penalties, worth **Minus 6 Points Each**
Questions???