

Supplementary Material C: Giant Panda Ethogram

1. **Not visible:** if you can't see the animal's head you really don't know what its doing, so score NV whenever you can't be sure of the activity. Do not guess.
2. **Feed:** animal is taking food into the mouth, processing/chewing food, mouth must be involved. Do not score FEED if the animal is only using paws to manipulate food.
3. **Locomote:** animal is traveling in exhibit, **minimum of two body lengths**. Includes any of the following behaviors:
 - Walk – animal is moving through enclosure quadrupedally
 - Run – as above but faster
 - Climb - vertical ascent or descent, as into trees, all limbs of animal must leave the ground, distinguish walking from climbing by looking for a body that is more vertical when climbing as opposed to more horizontal when walking.
4. **Maintenance:** behaviors related to cleaning, maintaining the pelt. Includes any of the following behaviors:
 - Groom – use of own limbs to scratch body, licking pelt. If animal has back to observer but appears to be licking, look for wiggling ears to confirm OR animal rubs a small part of its body repetitively back and forth against an object, as if “to scratch an itch”. Do not confuse with scent marking.
 - Scent anoint - A set of behaviors that take several forms and may have several purposes related to scent. This behavior includes when the animal picks up object with paws and rubs object over body, as well as rolling, rubbing against objects or substrates (but not scratching an itch which is repetitive, very focused), and writhing on the ground. You may also see face washing movements as seen in cats. The animal may throw dirt or substrate on its body.
5. **Investigate/Explore** – animal's body is stationary or moving and engaged in investigation of object or substrate. Includes any of the following behaviors:
 - Stationary investigate/explore – animal is manipulating/investigating an object, body may move, but the animal is not traveling.
 - Moving investigate/explore – animal is manipulating/investigating an object, and is moving/traveling quadrupedally in the exhibit.
6. **Locomotor play** – seeming pointless locomotor behavior, solitary only, does not involve objects. Behaviors include: jump, twist in air, somersault, headstand (do not confuse with scent mark), rolling, handstand, animated hanging/dangling from trees/snags, walking backwards.
7. **Object play** – similar to above, solitary only, involves objects or water, may involve locomotion. This is more animated than Stationary-Investigate above. Behaviors include throw, roll with object, shake object with mouth, batting with paws, jump on object, locomotes with object.
8. **Rest/sleep** – Animal is recumbent, seated, or leaning against substrate, not moving except for periodical shifts in position.
9. **Stationary Alert** – Alert, standing quadrupedally, sitting or lying but remaining attentive, moving head from side to side or sniffing air. Simply opening eyes or shifting positions while lying/resting do not count as Stationary Alert.
10. **Stereotypy** – may include any of the behaviors below.

- Lick/Suck paw
- Pirouette
- Other/tongue suck

11. Social Behaviors – interactions between giant pandas. Includes any of the following categories/behaviors:

- Friendly– includes playful/affiliative interactions between animals. Behaviors include gentle bites, body pushing, paw swatting, wrestling, grappling while standing on hindlimbs.
- Aggressive – agonistic behavior between animals. Similar behaviors as in Friendly however these are more intense, seem more directed at wounding, may occur more quickly or forcefully. May be preceded by chases. May be accompanied by roars, growls, squeals (from the victim).
- Sexual – sexual behavior between animals. Social sexual behaviors include for the female: backwards walking, tail up, and lordosis (female presents hindquarters to male keeping hindlimbs straight while lowering head to the ground, tail usually up). For the male: licking/sniffing female anogenital region, mount, improper mount, pelvic thrust, intromission(=insertion of penis)/copulation.