

Agonistic Behavior in *Betta splendens*

Tools in Ethology: The Ethogram

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You and your teammates should now be familiar with the natural history and basic behaviors of *Betta splendens*. It is time to consider a relevant, interesting animal behavior question to address, using this species as your model organism.

I. Research Tool: The Ethogram

An **ethogram** is a comprehensive list of all the behaviors that an organism exhibits. Before you can quantify behaviors to test a behavioral hypothesis, you must first gain an understanding of typical behavior for the species.

- What behaviors should you seek to observe?
- What behaviors occur in the environmental context that interests you?
- What sorts of behaviors are specific to your species?

An ethogram represents the first step of the scientific process, **making observations**. As you take careful notes, defining and categorizing the behaviors you observe, you follow in the footsteps of many natural historians before you.

In creating an ethogram, you must carefully observe and define each behavior, and consider exactly how the animal accomplished each movement.

- What anatomical parts of the animal were involved in the behavior?
- What position does it assume with respect to its stimulus?
- What was the context of the behavior?
- What other movements does the animal employ in a particular behavior?

Try to fully describe the animal's action *without* attempting to assign a function to that behavior.

Example: Observing a Wild Songbird

Consider observing a **wild songbird** in order to create an ethogram.

You might document several different behaviors.

Perhaps you see the bird capture and eat an insect.

This could be classified as two different behaviors

1. **capturing**
2. **eating**

Perhaps you observe the bird moving around.

- Does it **fly** from branch to branch?
- Does it **hop**?

These might be considered two different locomotion behaviors.

Perhaps you hear the bird making sounds.

- What is the **nature** of each sound?
- What is the **duration** of each sound?
- Under what **circumstances** does the bird make each type of sound?

Some example behaviors for a songbird are listed in Table 1. The definitions of each behavior include descriptions of what anatomical parts may be involved, and clearly differentiate between similar behaviors.

Table 1. Selected observed behaviors of a songbird

Behavior	Description of behavior
Prey Capture	The bird pursues and catches an insect in its bill. May or may not include flight.
Feed	Feed – The bird is consuming food. This includes macerating the food.
Call	The bird produces simple, short vocalizations
Sing	The bird produces complex vocalizations of longer duration than calls
Wing Wave	The bird raises one or both wings, vibrating them away from the body. Occurs in agonistic situations.

II. Creating an Ethogram

In today’s lab, your team will engage in three activities related to creating and using an ethogram.

- Observing a fish at rest to catalog its normal behaviors
- Observing a stimulated fish to catalog its agonistic behaviors
- Practicing timed trials of agonistic behavior observations

Refer to “Creating and Ethogram” linked to the syllabus for instructions.