Objective: to catalogue and observe behavioral foraging patterns in ptarmigan using a key-logging program (BORIS). This project and ethogram are based on a 1980 article found in The Wilson Bulletin. <https://www.jstor.org/stable/pdf/4161357.pdf>

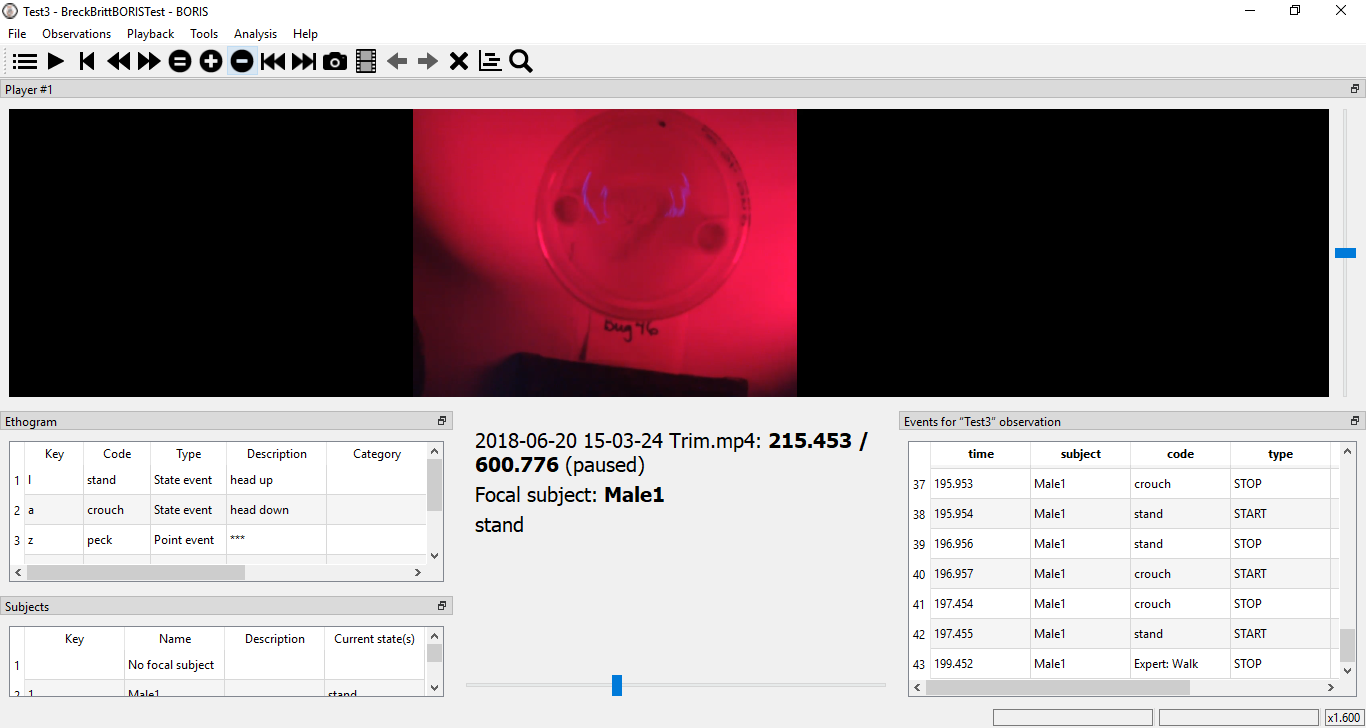
Setting up your behavioral station:

1. Install [BORIS](http://www.boris.unito.it/pages/download.html) and download project data (project file on Blackboard).
2. Open BORIS application.
3. In the BORIS application go to **File** ↳ **Open project** and open the project data. Accept any changes they want to do. Most likely they want to update the project to a current version. I have the original \*.boris and updated versions in the team drive. The project file contains the ethogram we will be using for this lab (Table 1).
   1. If this is your lab for independent projects and you want to design your own ethogram, you will find detailed instructions at <https://boris.readthedocs.io/en/latest/#set-your-ethogram-from-scratch>. If you are still struggling, reach out to your lab instructor.

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| --- | --- | --- | --- | --- |
| Table 1. Project Ethogram (if you want to change the keys on the board see pg. ?). In order to test your knowledge fill out the blank cells. | | | | |
| **Behavior** | **Key (on keyboard)** | **Event type** | **Behavior exclusion** | **Description** |
| Stand | l | STATE |  | Vigilance (head up; aware) |
| Crouch | a | STATE |  | Foraging (head down) |
| Peck | z | POINT |  | Bite rates |
| Off-camera | o | STATE |  | No behavior; subject can no longer be observed on video |
| Expert Mode: Walk | w | STATE |  | Subject is on the move |

Start collecting behavioral data

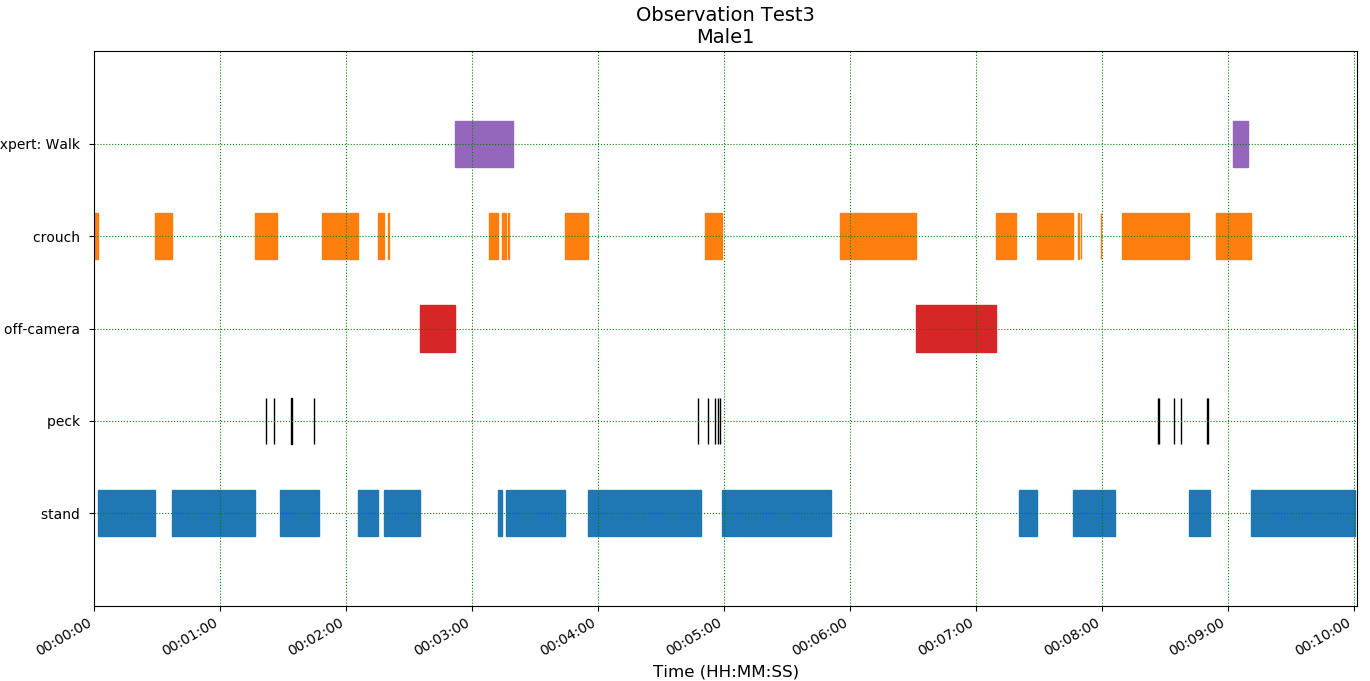
1. Next go to **Observations** ↳ **New Observation**
2. Add observation id: Example
3. Add media
4. Save
5. Before you start
   1. Get familiar with menu bar. <https://boris.readthedocs.io/en/latest/coding.html?highlight=change%20playback%20speed#media-based-coding>
   2. Get familiar with the main window during an observation. <https://boris.readthedocs.io/en/latest/_images/observation_live.png>
6. Start Observation - select created observation and click start
7. Push subject key and make a note elsewhere and not in program where the subject is at BEGINNING of film. (e.g., right bird next to rock)
8. Determine subject’s initial behavior and push behavior key.
9. Push play and then pause (spacebar is very effective at this)
10. Adjust film speed (+/-/= buttons) recommended!
11. Adjust different window panes (Figure 1). You want to be able to see keys & code under ethogram. Ride-sided pane (Events for observation) you want to be able to see the time, subject, code, type (see below for reference).
12. Before restarting your video double check that a focal subject is selected and an initial behavior. Focus on capturing the start of behaviors, don’t worry about making any mistakes for the practice video. Always be verifying in the center information panel that you have a focal subject and behavior selected for the entire video, there should be no gaps in your time budgets.



1. After video is finished, right click inside Events for observation pane and click check state events, which will give you a new pop-up where you made all your mistakes. If you want, save the text so it is easier for you to refer to while fixing unmatched pairs.
2. Rinse and repeat for next focal subject OR you may also choose to proof your data (see next step) in-between focal subjects.

Proofing your data

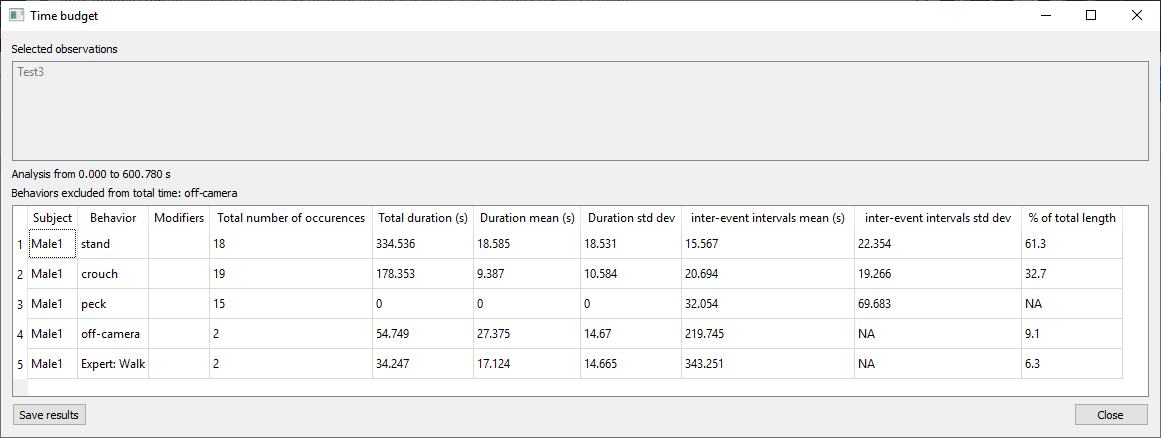
1. Double-clicking a row in this pane will also bring you to that point in the video, and you can verify in the center information panel what subject and behavior is selected for that time.
2. If you need to delete events just select the event(s) to be deleted and right-click and click **delete selected events**. Additionally you can fix unmatch pairs by either selecting **fix unpaired events**.
3. Double check that everything is hunky dory by going to **Analysis** ↳ **Plot events** ↳ **Plot events**
4. Select your observation its id and click Ok. In the next window (**select subjects and behaviors**) just verify that your subject(s) are selected. Check the **Exclude behaviors without event** box and **Full observation(s)** is bubbled and click Ok. You should get a graph like below:



1. Make verify that events don’t overlap or gape in an inaccurate manner. Point event should be occurring inside state events. Do you notice any trends immediately?

Analysis

1. Go to **Analysis** ↳ **Time Budget**
2. Select your observation its id and click Ok. In the next window (**select subjects and behaviors**) just verify that your subject(s) are selected. Check the **Exclude behaviors without event** box and **Full observation(s)** is bubbled and click Ok. The next window, **Select behaviors to exclude**, check the off-camera box and click Ok. You should receive a window that looks like this:



1. Click the save results box and save the document in a format you want (\*.tsv, \*.csv, \*.xlsx, \*.txt)

Things to think about

1. What is the difference between a state event and a point event? Are they mutually exclusive?