

Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held.

Flying Bird

C Division

1. **DESCRIPTION:** Prior to the tournament, participants will construct and test, to achieve maximum flight times, up to two rubber-powered flying birds, also called "ornithopter", which are propelled solely by flapping wings. The event must occur inside and the room dimensions (approximate length, width and ceiling height) should be made available to teams in advance of the competition. Directors and supervisors are urged to minimize the effects of environmental factors such as air currents (e.g., doors, fans, etc.).
NUMBER OF PARTICIPANTS: UP TO 2 **TIME:** 8 minutes **IMPOUND:** No
2. **CONSTRUCTION:**
 - a. A rubber motor powered, flapping wing driven bird may be constructed from published plan(s), commercial kit and/or a student's design as long as the specifications below are satisfied:
 - b. Birds must have a monoplane configuration: only one pair of flapping wings. Any stabilizer or lifting surface other than the flapping wings must be located behind motor hook.
 - c. Birds must be constructed only from wood, tissue paper, and glue, except as follows: Metal or plastic parts may be used in the flapping mechanism, wing hinges, tail booms and motor hooks. Plastic or rubber o-rings may be used to attach the motor to the bird.
 - d. Carbon fiber, boron, and kevlar are not allowed.
 - e. The motor stick and other parts must be solid wood. Hollow wood parts are not allowed.
 - f. The bird(s) must be marked so that the judges can identify to which team they belong.
3. **THE COMPETITION:**
 - a. Once teams enter the testing/flying area to compete, they may not leave the area or receive outside assistance, materials or communication until they are finished competing. Only competitors and judges will be allowed in the testing/flying areas. The event supervisor shall have a separate designated area away from the competitors' area for coaches, parents, and other spectators. Any team violating this paragraph shall be disqualified.
 - b. At the event supervisor's discretion, test flights may occur throughout the contest but will yield to any official flight. Before beginning their test flights, teams must have an official stamp or mark their log confirming it shows data for 10 previous flights. No test flights will occur in the last half-hour of the event. Multiple birds may test fly at once. A self-checking inspection station may be made available to students for checking their birds. The use of any type of winder is permitted.
 - c. Each team must present a flight log of recorded data for at least 6 parameters for at least ten test flights prior to the competition. The three required parameters to be recorded are: 1) motor size before windup, 2) number of turns on the motor at launch, 3) flight time. The team must select 3 additional data parameters beyond those required, for example, turns remaining after landing, estimated/recorded peak flight height, estimated flight path diameter, the torque at launch, any attributes of the flapping mechanism that can be adjusted, etc.
 - d. Teams will be given 8 minutes to launch 2 official flights. Any flight beginning within the 8-minute period will be permitted to fly to completion. Participants will be permitted to make adjustments to the bird; however, time for such adjustments will be part of the 8 minute flight period. Teams must elect to

Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held. fly their second bird (if available) if their first gets hung up on an obstruction or is catastrophically damaged during the competition. They will not be given extra time to recover or to repair their bird.

- e. Timing for each flight starts when the bird leaves the student's hand and will stop when any part of the bird touches the floor. If the model comes to rest on something other than the floor, another watch will be started. If the model comes free within ten seconds, timing continues. If not, timing ceases and ten seconds are deducted from the time for the official score. The timing official will measure and record the time aloft to the nearest tenth of a second for each flight. Steering the model is prohibited.
- f. During the flight of one team's bird, other official flights may be permitted by the event supervisor once the prior bird has started its descent. In the unlikely event of a collision, a team may elect a re-flight. The decision to re-fly may be made after their bird lands. The eight-minute period does not apply to such flights.

4. **SCORING:**

- a. Score will equal the time aloft in seconds, plus any applicable bonus points:
- b. If the ornithopter is decorated in a manner that makes it look more like a real bird, 5 seconds will be added to the flight time. Birds lacking heads will not receive these points.
- c. Teams with incomplete flight logs will have 30% of the actual (pre-bonus) flight time deducted from each flight.
- d. Teams without flight logs will have 50% of the actual flight time deducted from each flight.
- e. Teams that violate a rule under "CONSTRUCTION" or "THE COMPETITION" that does not have a specific penalty will be ranked after all teams that do not violate the rules.