Introduction

- Insect emergence is a fundamental process in freshwaters: it represents a critical life history stage for aquatic insects and provides an important prey resource for terrestrial and aquatic consumers.
- Sticky traps are widely used for sampling these insects.
- A conventional trap consists of an acetate sheet coated in a non-drying adhesive that is attached to a wire frame or cylinder.
- Can be time consuming and difficult to work with.
- Our goals were to develop a low cost sticky trap that could be prepared in advance, was easily transported, could be used to estimate flight direction of aquatic insects, and that could be rapidly deployed and recovered.

Methods

- We used 150 mm Petri dishes with lids, which can be coated cleanly and consistently with Tanglefoot® and stored indefinitely.
- A 2.5 cm x 2.5 cm piece of adhesive backed Velcro (pile side) squares to the center of each dish.
- Using a large vise, we laterally compressed the top 150 mm of the pole and the next lower 150 mm perpendicular to the first compressed area.
- Four dishes can be attached to the pole aligned in four cardinal directions, allowing investigators to easily estimate insect flight direction.
- The pole can be pushed or hammered into the ground, or when the ground is rocky a cairn of rocks can be built around the base of the pole near the high water line.
- After sampling, Petri dishes can be taped closed, and packed in boxes.

Case Study

- Proof of concept study to test the efficacy of this method.
- Sticky traps placed at 0, 50, 100, 200, and 400 meters.
- On 29 May, 2013 a total of 18 poles were deployed with 72 petris over 1.2 kilometers for 24 hours.
- Upstream and downstream of the confluence.
- Both sides of the Paria River.
- Petri traps are easy to use and fast.
- Petri traps are effective.
- Petri traps are cheap.

Results

- Deployment time trials found petris to be:
  - 3.3X faster than suspended acetate sheets.
  - 4.9X faster than cylinder traps.
- Chi Square test conducted on flight direction detected.
- Results suggest catches are not random.

Discussion

- The findings suggest a general outward flow of insects from the tributary into the mainstem.
  - Dispersal both upstream and downstream from the confluence (Fig. 2).
- Another observation is reduced numbers of insects within the tributary compared to the mainstem.
  - Likely due to reduced area for production and a less productive substrate type.
- Also noted was an increase in insect abundance adjacent to more productive river substrates.

Conclusion

The Petri sticky trap performed well in our study environment. The convenience of having prepared traps allowed us to deploy a large array in a reasonably short amount of time. There are some trade-offs for convenience in that Petri traps require a considerable amount of space to store and transport. Large petri dishes are an ideal platform for sampling emergent insects, particularly when rapid deployment and recovery is critical.