

Improvements in Eye Gnat Mass Trapping in San Diego County

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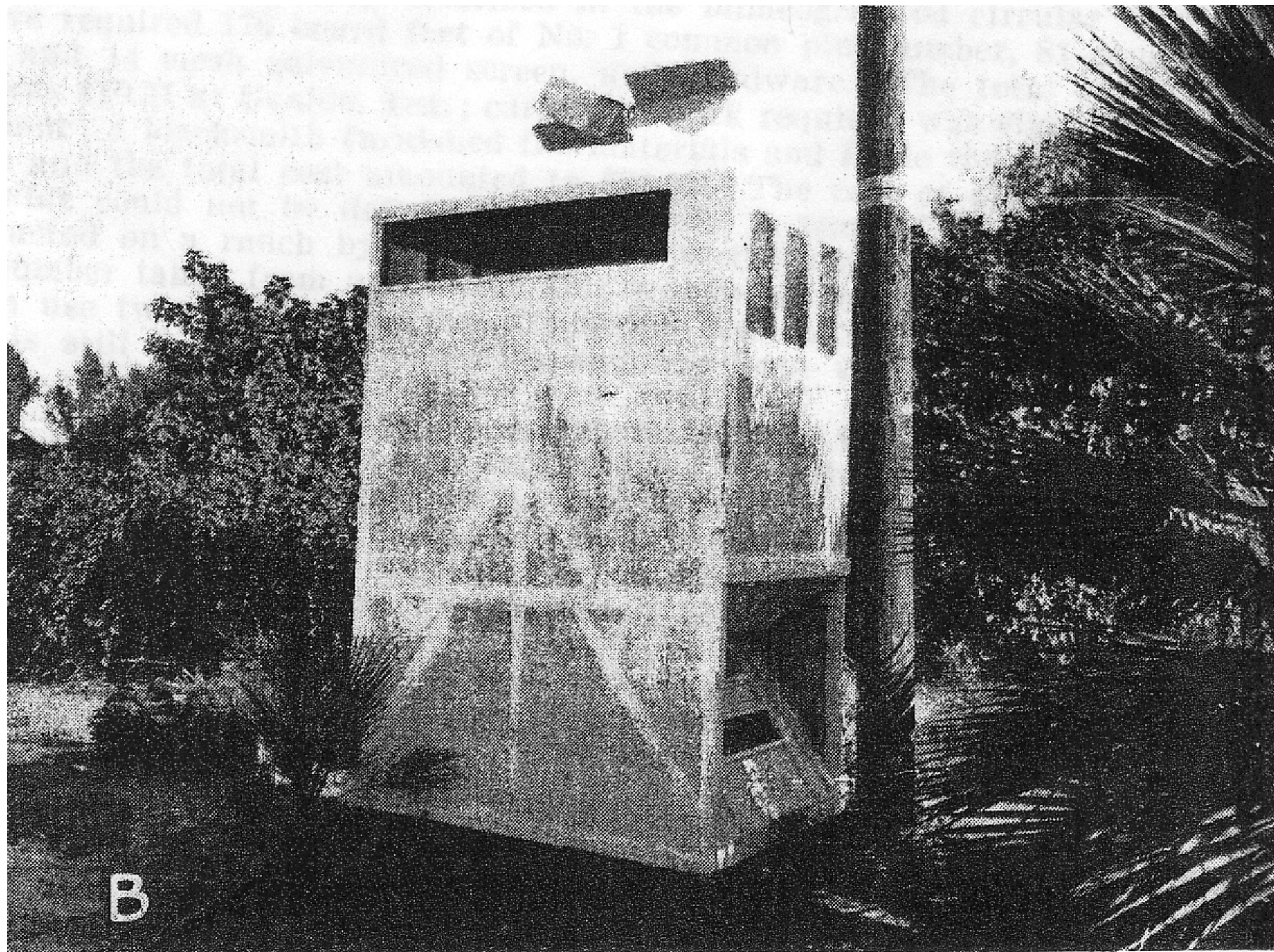
Special Thanks

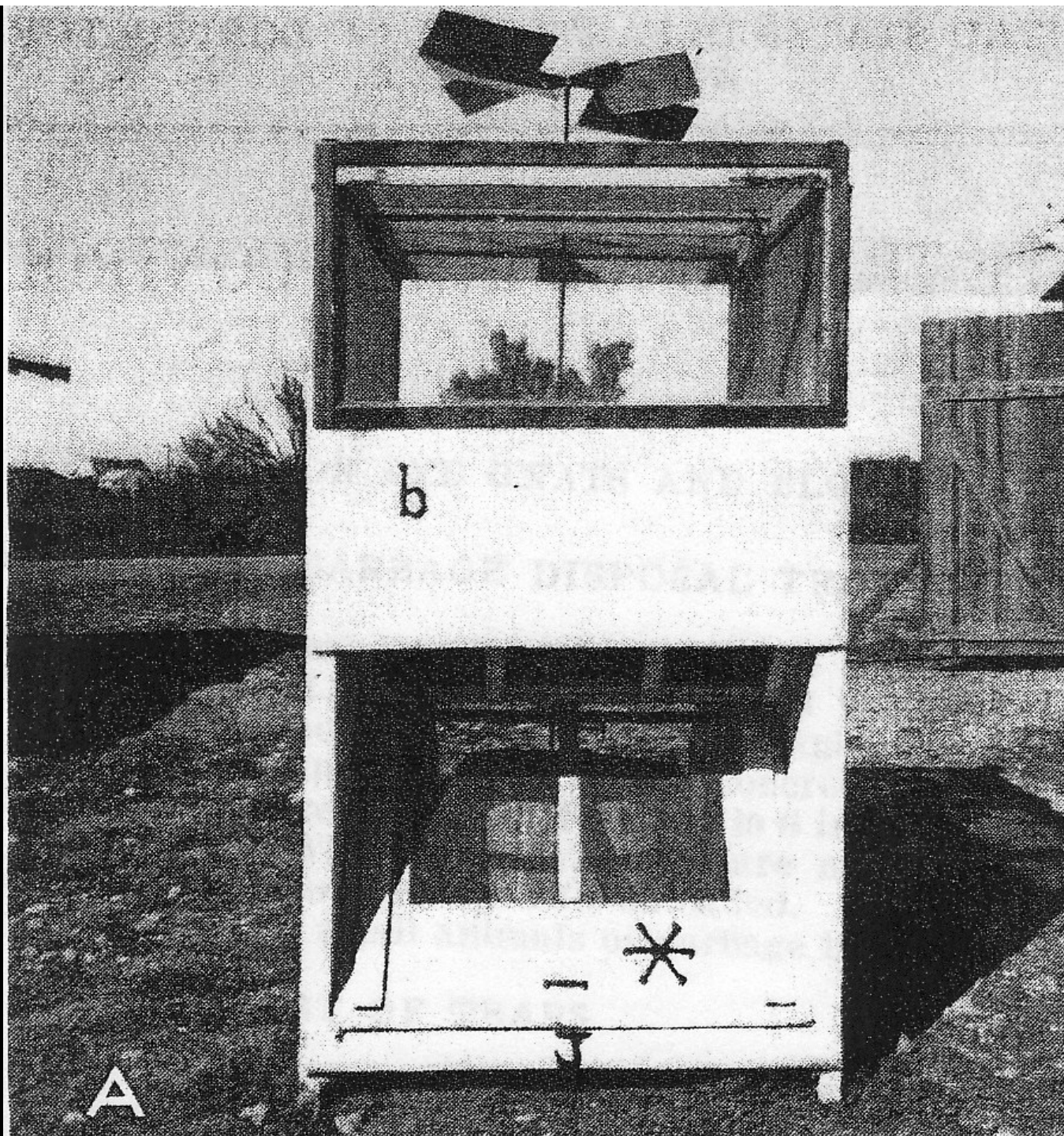
- Jim Bethke – UCCE San Diego
- County of San Diego - \$
- Dr. Mir Mulla and Harold Axelrod – UCR
- Irma DeBonis – Ag. Tech.
- Bornt & BeWise Farms
- Center for Applied Horticultural Research,
Vista



When did it start?

- “A box-type trap to aid in the control of eye gnats and blowflies”, D.C. Parman
- Circular No. 247, USDA, November 1932
- USDA Bulletin E-299 – Construction
- Tested in Coachella Valley





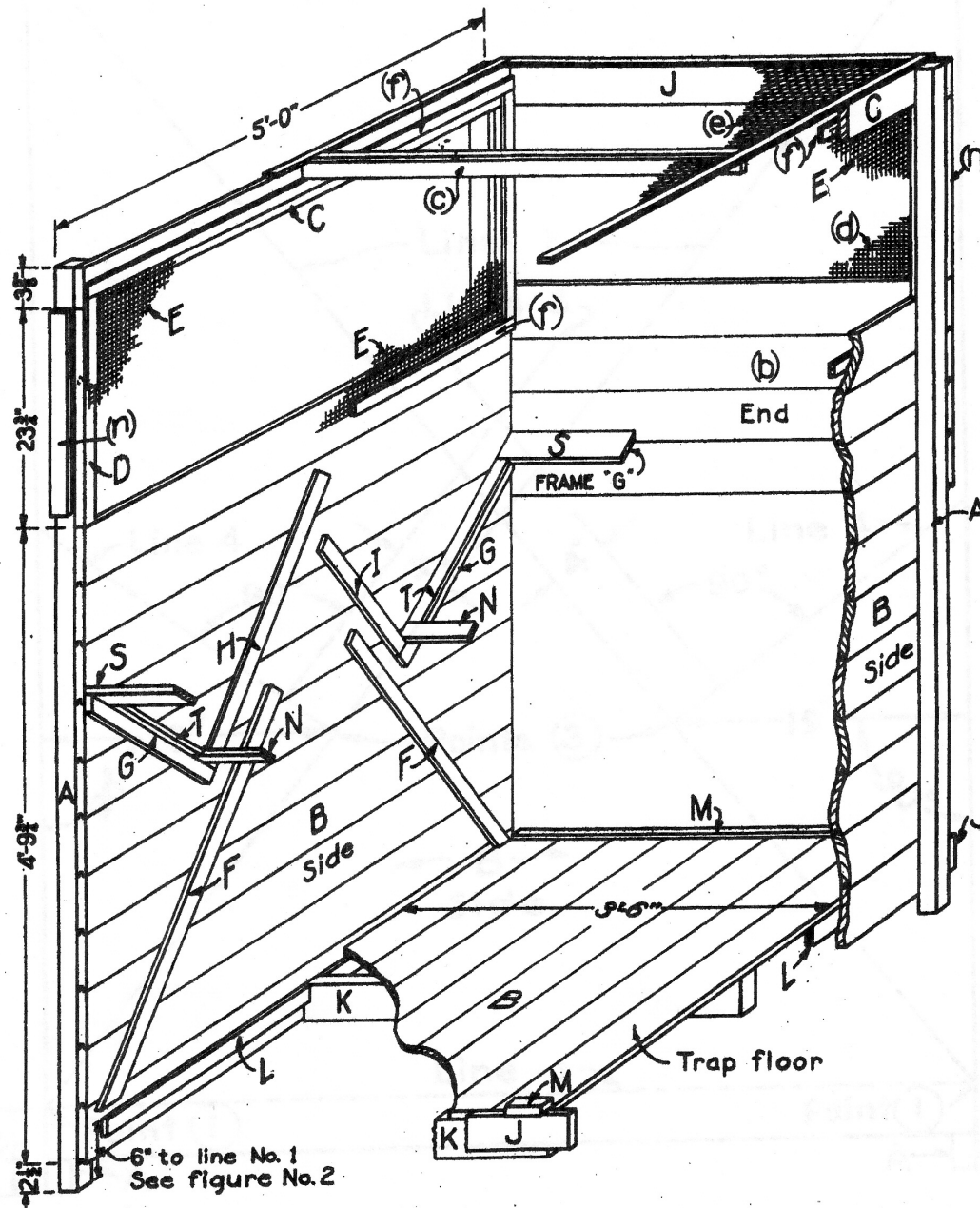


Figure 1-Assembling fly trap proper.

Specs

- 2' W X 6' L X 8½' H
- 28 gallon vat
- Cost per trap \$75.63 (1932 dollars)
- 42.5 hours labor
- Over 9 day period
 - 109,777 gnats/day!

Some Aspects of Trap Color and Design for *Hippelates Pusio*

- Edward L. Snoddy – J. Med. Ent. August 1974
- Coastal Plains Exp. Station, Tifton, Georgia

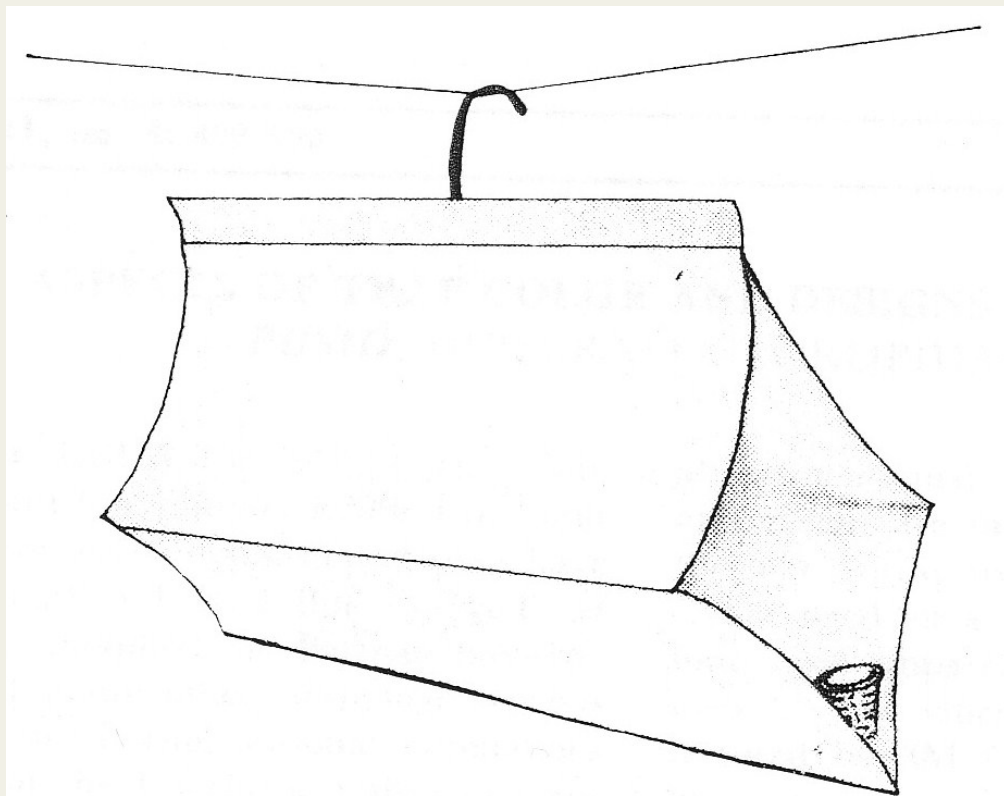
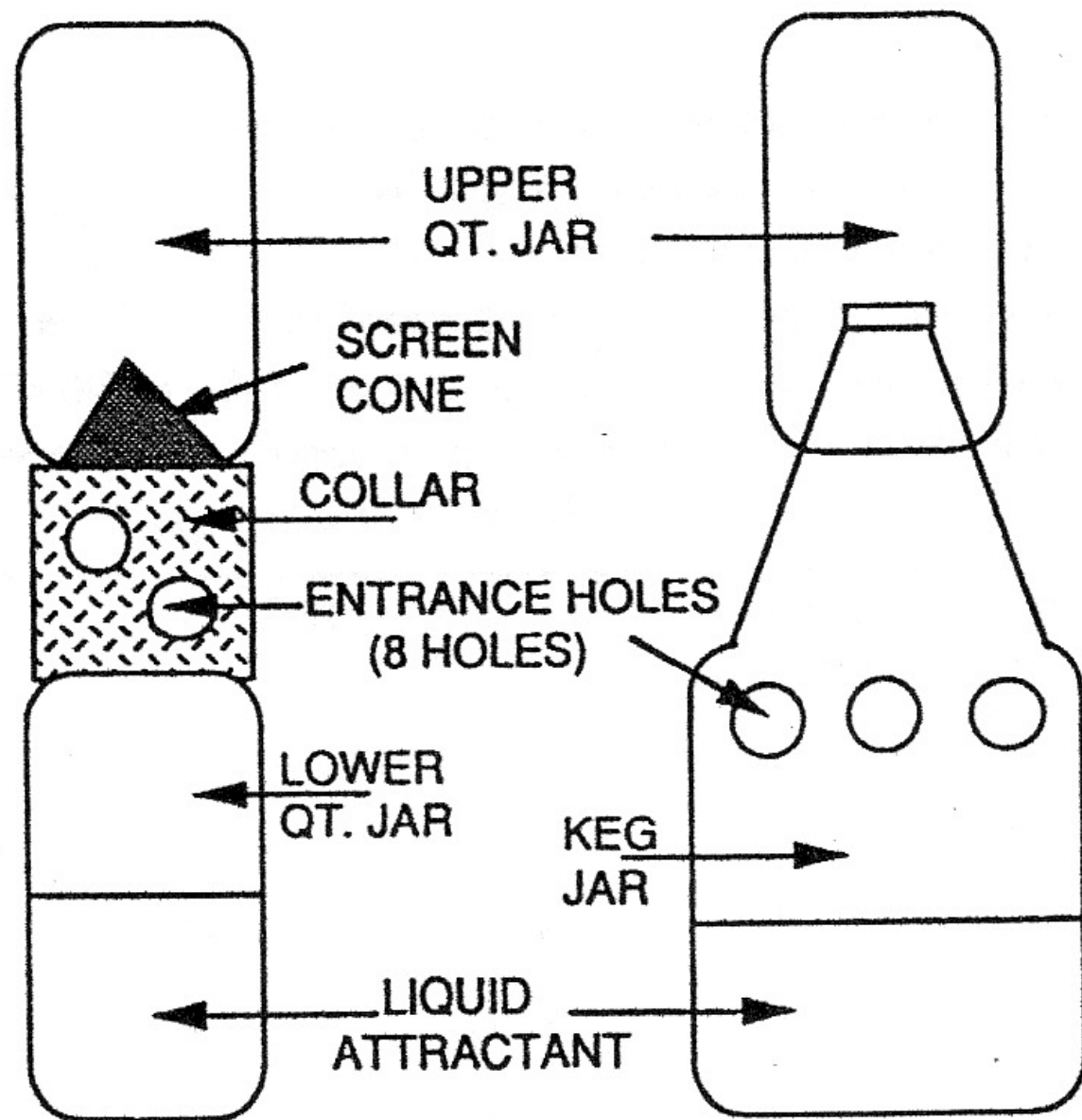


FIG. 2. 3M Sector I insect trap with bait cup inside.

Development of the Collar and Keg Traps

- “Hippelates eye gnat attractant and trap design”, H. Axelrod, M. Mulla, & D. Mandeville
- 1993 Proc. Calif. Mosq. Vector Control Assoc.
- White collar (verses clear) with eight 17mm holes most effective



COLLAR TRAP

KEG TRAP

Cheap vs. Collecting Data



2008 UCCE San Diego Collar Trap



- 2 one pint wide mouth mason jars
- 3-inch ABS coupler
 - with 8 1¼-inch holes
- 80 mm Nalgene funnel
- Glue mason jar rings in coupler using silicon caulk
- Glue mesh over bottom ring to prevent gnats from entering bait

Design Experiments





The “Gnatinator”/“Notinator”



8-hole Collar vs 4-hole Collar



Testing Procedure

- One trap type taped to 3-foot wooden stakes
- Opposing design placed approximately 4 feet from other on separate stake
- Replicated 5-6 times at different locations

8 hole collar traps verses 4 hole collar traps with the average number of gnats caught per trap

	Mean (SE) Number of Eye gnats/Trap		ANOVA parameters		
Date (2009)	8 Hole	4 Hole	F	df	P
24-Jun	191.7 (60)	697.5 (485)	0.48	1,9	0.5173
29-Jun	143.2 (88)	311.3 (113)	2.18	1,9	0.1995
4-Jul	177.3 (94)	694.5 (454)	3.84	1,9	0.1074
12-Jul	76.7 (39)	859.3 (690)	4.37	1,9	0.0908
18-Jul	338.2 (241)	256.3 (135)	0.82	1,9	0.4078
23-Jul	27.2 (18)	82.3 (67)	1.13	1,9	0.3369
Pooled	954.2 (323)	2901.3 (1253)	9.24	1,9	0.0288

Collar Trap Built by Bornt Farms



- Square pinch grip clear plastic top
- 3-inch white PVC coupler
- $\frac{3}{4}$ inch holes
- 3-inch capped drainage pipe used to hold bait
- paper cup funnel
- mesh screening placed over bait cup

8 Hole UCCE Trap vs. Bornt Trap

	Rep.	8/14-8/20	8/20-8/27	8/27-9/3	mean
	1	51	26	9	28.67
	2	6	2	93	33.67
	3	14	1	2	5.67
8 hole mason jar	4	4	18	13	11.67
	5	16	1	1	6
	6	0	8	4	4
	Avg.	15.17	9.33	20.33	14.94
	1	1	1	0	0.67
	2	0	0	0	0
	3	0	0	0	0
PVC Trap	4	0	0	1	0.33
	5	1	1	0	0.67
	6	0	3	0	1
	Avg.	0.33	0.83	0.17	0.44

Modifications Made to Bornt Trap

- Paint interior and exterior of coupler black
 - Paint bait container black
- Change paper cup to clear plastic funnel
- 8 hole trap = avg. 136 gnats/trap
- Modified trap = avg. 256 gnats/trap!



NAT TRIAL
ROGRESS

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Glossy vs. Flat gnats/trap

	Rep	4/26-5/3	5/3-5/10	5/10-5/18	Mean
Glossy	1	716	538	375	
	2	201	753	565	
	3	1514	891	11	
	4	n/a	102	142	
	5	2718	1344	1065	
	Avg.	1287.3	725.6	431.6	814.8
Flat	1	1314	2144	819	
	2	243	1517	11	
	3	2976	1660	327	
	4	n/a	148	n/a	
	5	3027	2755	830	
	Avg.	1890	1644.8	496.8	1343.9

4 hole vs. Flat gnats/trap

	Rep	4/26-5/3	5/3-5/10	5/10-5/18	Mean
4 hole	1	91	318	84	
	2	62	438	68	
	3	761	286	21	
	4	n/a	19	4	
	5	189	318	149	
	Avg.	275.8	275.8	65.2	205.6
Flat	1	1314	2144	819	
	2	243	1517	11	
	3	2976	1660	327	
	4	n/a	148	n/a	
	5	3027	2755	830	
	Avg.	1890	1644.8	496.8	1343.9

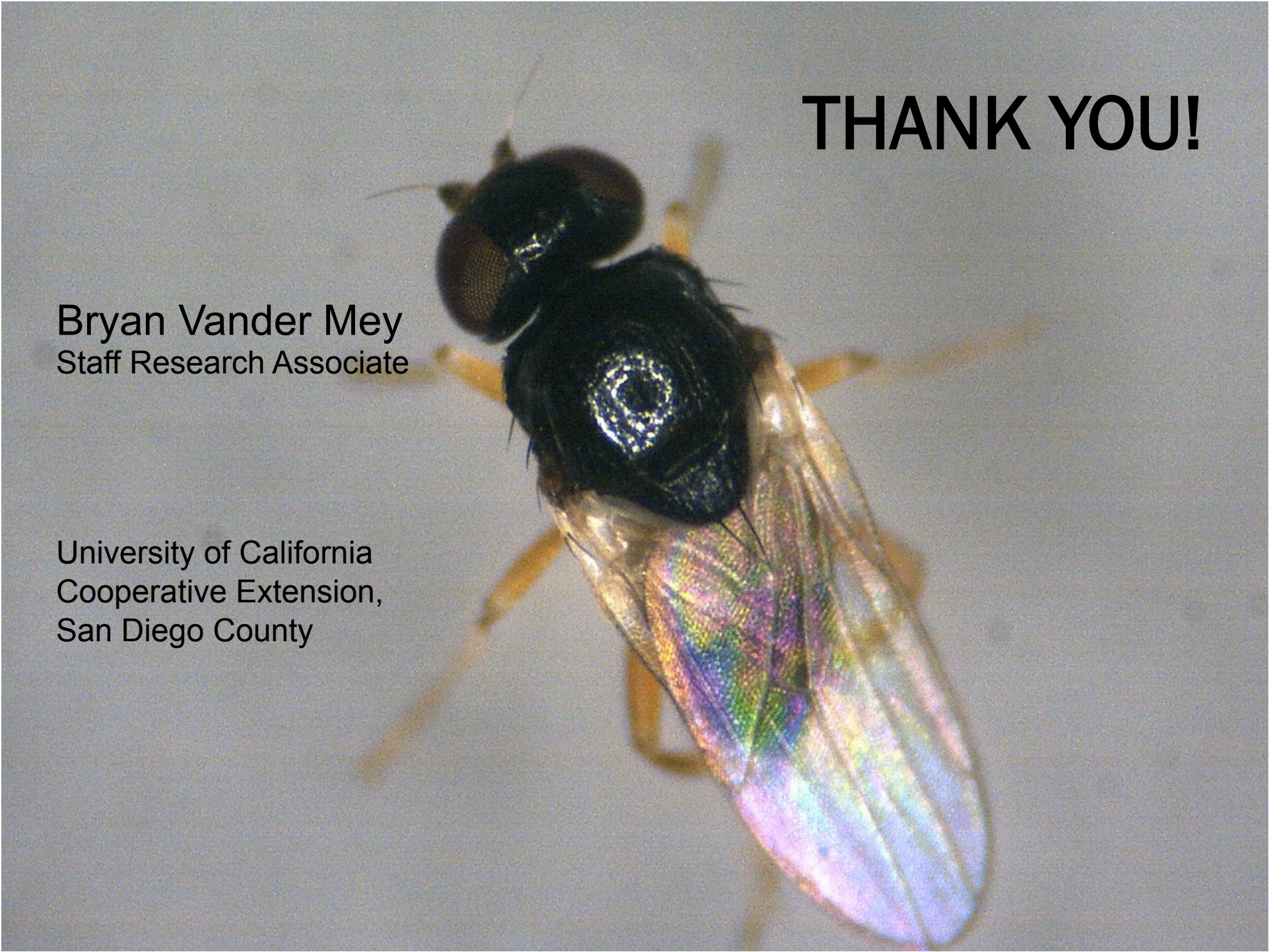






Keys on Optimizing Collar Traps

- Flat Black – inside and out
- Clean and clear funnel and top container
- Holes around $\frac{3}{4}$ inch
- Full bait jars
- Place at 1-4 feet above ground

A close-up photograph of a small fly, likely a species of fruit fly, with iridescent wings showing rainbow colors and a dark, metallic-looking body. The fly is positioned diagonally across the frame, facing towards the top left. The background is a plain, light-colored surface.

THANK YOU!

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