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Supplementary Information for

Weak warning signals can persist in the absence of gene flow

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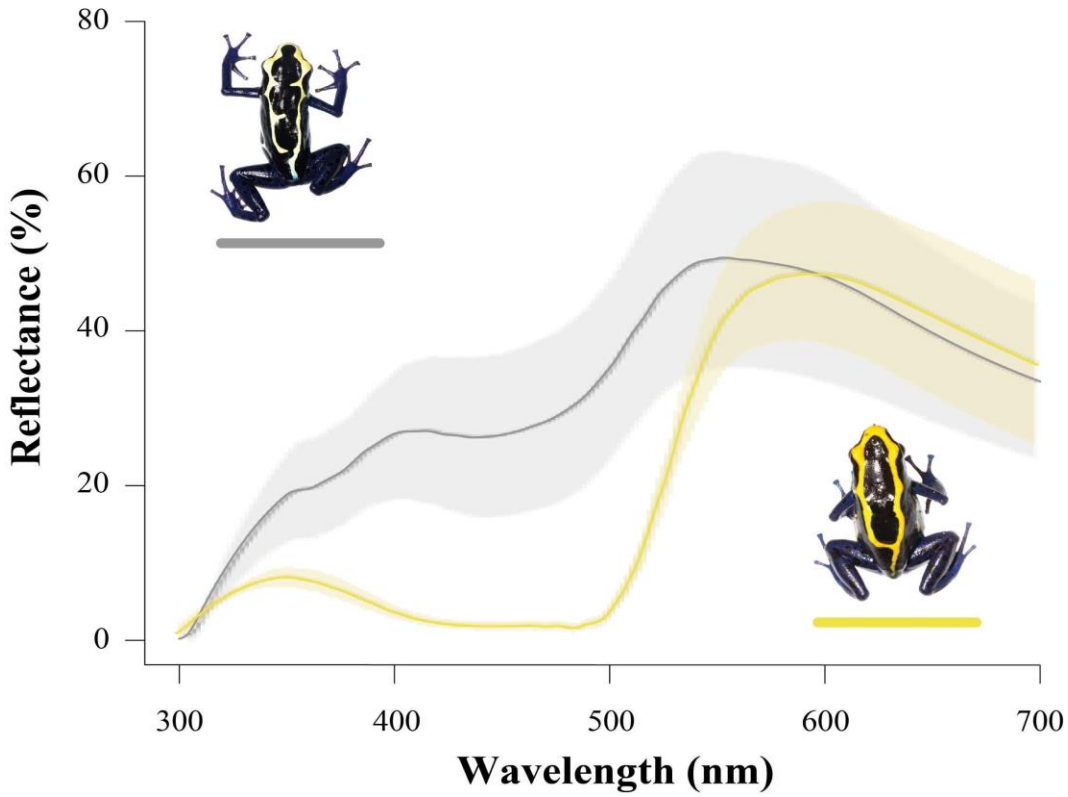

Fig. S1. Reflectance curves of the white and yellow populations with 95% confidence intervals.

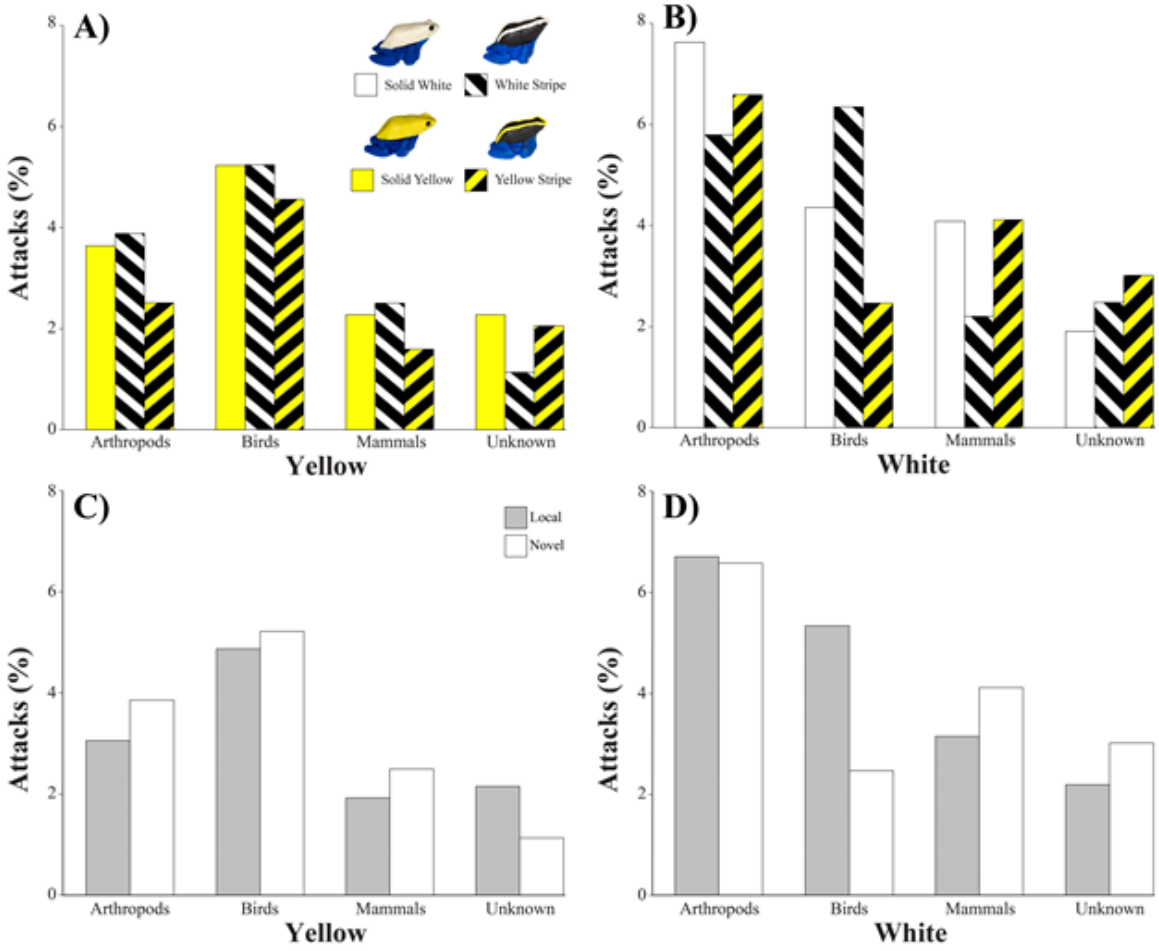

Fig. S2. Proportion of attacks from various predator groups in the A) yellow and B) white populations of Dendrobates tinctorius. Model type can be grouped as either local (gray) or novel (white) in the C) yellow and D) white populations based on whether the color is locally found or not (i.e., yellow stripes and solid yellow would be grouped as local in the yellow population). Only birds were considered for analysis as mammals and arthropods can be motivated by chemosensory, and we cannot discount chemosensory information motivating attacks in these taxa. Unknown attacks were clearly attacked but lacked identifying marks to group them.

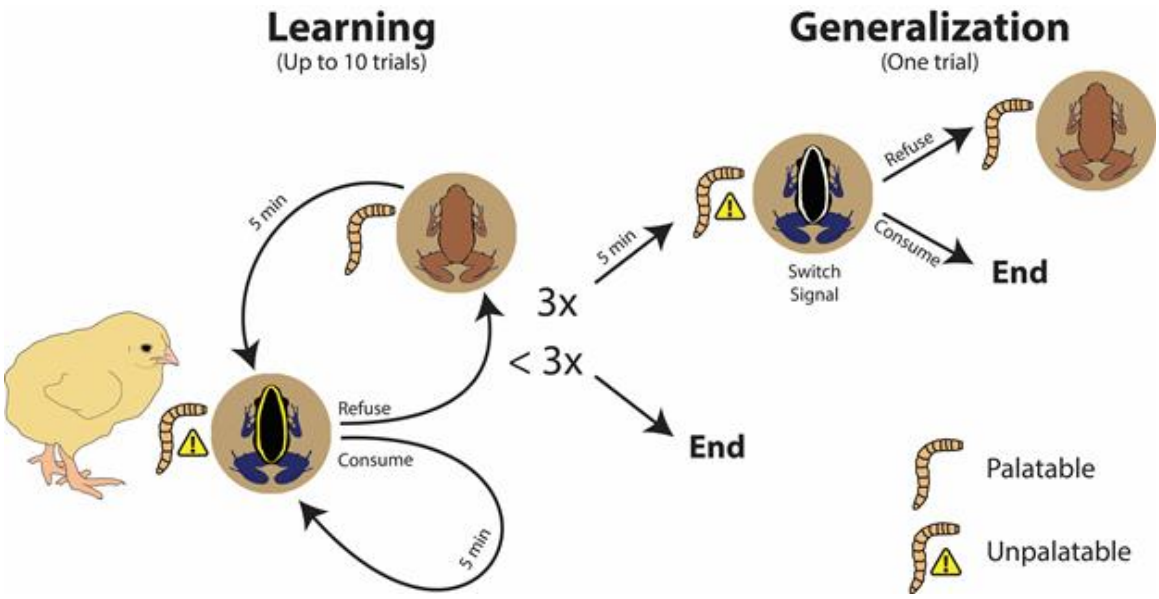

Fig. S3. Schematic of the chick learning experiments. Chicks were exposed to a printed frog (i.e., yellow-stripes) associated with an unpalatable mealworm. If they refused, they would be given a palatable mealworm with a brown control frog to ensure they were hungry, then be given a 5-minute resting period. If they refused three times in a row, they moved to the generalization experiment where they were exposed to the opposite signal (i.e., white). If they refused, they were given the mealworm associated with the brown control frog to ensure hunger before ending the experiment. If chicks did not refuse a mealworm three times in a row during learning, the experiment went to 10 trials before ending.

Table S1. Distribution of alkaloids in the white (*) and yellow (†) populations.

	1 3,5-I	2 5,6,8-I	3 3,5-P	4 HTX	5 DHQ	6 1,4-Q	7 aPTX	8 5,8-I	9 SpiroP	10 4,6-Q	11 Dehydro – 5,8-I	12 Tri	13 Unc	14 Pip	15 New
	195B† 223AB(3)*† 275C*†	193G† 195D*† 205A† 207C† 219N* 223A† 225K*† 231B(3)*† 233G* 235E* 236A* 237C(2)† 245G* 249C* 249BB(2)* 251T(3)* 259C(2)* 261B* 263A* 265L or U* 265U* 265L(4)* 267R*	209Q(2)*† 223B(3)*† 251K(2)*†	235A(2)*† 238A† 245A* 259A* 261A† 283A† 285A† 285C† 291A*	195A† 195J(2)† 219A(5)*† 221D† 223F† 243A(7)*† 245Q† 269B*	231A*† 235U*	305A* 339A*	243C* 237D†	236*†	195C† 275I†	265T†	205B* 205E* 207G*	209G† 209M* 227† 235BB(2)† 247M† 249N*	213†	171† 193* 207* 209(2)*† 217* 223† 229† 233† 235† 245* 247(2)*† 253*† 275*
Total White	2	18	3	4	3	2	2	1	1	0	0	3	2	0	8
Total Yellow	3	8	3	6	7	1	0	1	1	2	1	0	4	1	8

If multiple isomers were found of a particular alkaloid, the number of different isomers is depicted in parentheses. Alkaloid classes are as follows 3,5-disubstituted indolizidine (3,5-I), 5,6,8-trisubstituted indolizidine (5,6,8-I), 3,5-disubstituted pyrrolizidine (3,5-P), histrionicotoxin (HTX), decahydroquinoline (DHQ), (1,4-Q), allopumiliotoxin (aPTX), 5,8-disubstituted indolizidine (5,8-I), spiropyrrolizidine (SpiroP), 4,6-disubstituted quinolizidine (4,6-Q), dehydro-5,8-disubstituted indolizidine (Dehydro-5,8-I), Tricyclic (Tri), Unclassified (Unc), piperidine (Pip), and new, undescribed (New) alkaloids.