BEACON
An NSF Center for the Study of Evolution in Action

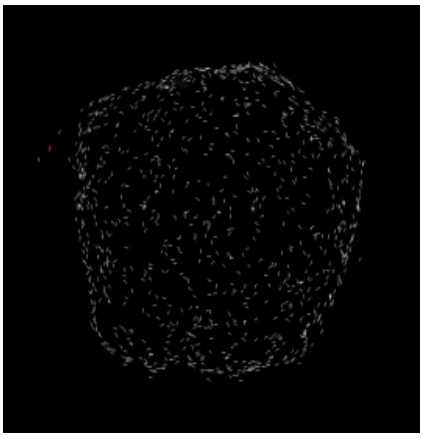
BEACON BUZZ

Bi-Monthly Newsletter
Summer Edition 2013

Confuse a Predator? That's a Smart Idea

The Evolution of Swarming Behavior

Swarming is common in many animals, but exactly how and why this behavior might have evolved is unclear. Because studying the intricacies of swarming behavior in the wild is incredibly complex, a multi-disciplinary team of BEACONites developed a computational model to test just one element of how swarming may have arisen: through predator confusion.



Predator confusion is a simply a strategy to avoid being eaten: if a predator is confused by lots of action, or the blending of body shapes between prey, for example, each prey animal stands a better chance of surviving and avoiding attack.

In their model, predators and prey continuously interacted and were selected for evolved survival-enhancing behaviors. After repeating this many different times, lead author Randy Olson and colleagues found that "....swarming evolved as a defense to exploit the predator confusion effect. Rather than seeing just one or two prey when the predators attack, which is what happens when prey scatter, swarming makes the predators see many prey, which confuses them and allows more prey to survive."

The team is excited about this finding, as it brings them ever-closer to their ultimate goal of understanding the evolution of how intelligence evolved in nature.

"Swarming is a complex behavioral trait that increases the chance for survival," co-author Chris Adami said. "Intelligence is an even more complex trait that also increases the chance for survival, so understanding one will help us understand the other."

Find it online to read more: Olson RS, Hintze A, Dyer FC,. Knoester DB, Adami C. (2013) Predator confusion is sufficient to evolve swarming behavior. *Journal of the Royal Society Interface.*

Swarm photo courtesy of Randy Olson.

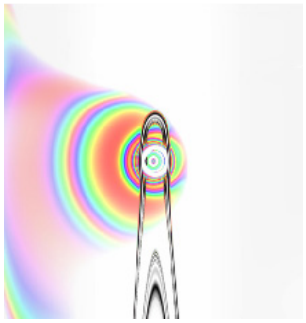
The Winners: BEACON Logo Evolution

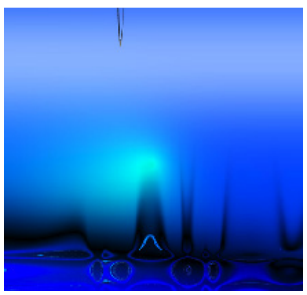
The results are in! The three-month evolved art competition to create a new, alternative BEACON logo has yielded some awesome art.

Starting from a random image on picbreeder.org, artists "bred" and selected "offspring" images which differed slightly from the original. The changed images, or "mutants", which looked most like lighthouses were then chosen as "parents" for the next round of selection. After repeating this process many times: Bingo. Lighthouses...or something pretty close to it.

Fifty entries were received and judged by a committee of 6 BEACONites: Connie James, Masoud Mirmomeni, Randy Olson, Rob Pennock, Jory Schossau, and Allison Walker.

Take a look at the winning entries and let us know what you think!





Winners:

First Place (top left), $250 giftcard

Second Place (top right), $100 giftcard

Third Place (bottom left), $50 giftcard

If you'd like to see more of the entries, including the honorable mentions, or learn more aout the process of making this art, visit the BEACON Blog here!

BEACON Congress: Summer 2013

This year's BEACON Congress will be held August 12-15 at Michigan State University.

Attendance at the conference is free for all BEACON members. Those traveling from partner institutions, please be sure to inform BEACON Headquarters, who will make your hotel reservations and book flights.

What you can expect:

1. Sandbox Sessions: Brainstorming, networking, and research planning sessions, designed to bring together people with overlapping interests who are interested in working collaboratively.

2. Tutorials/Workshops

3. A Retreat Day, Just for Grad Students and Postdocs

4. Sessions on Responsible Conduct in Research (RCRs)

5. Awesome Talks from Researchers across the Country

Final Program available at the QR code to the right.

Get Excited!

Hot or Not...or Good Enough?

How to Choose a Mate When Mates are Rare and Time is Short

Choosing a mate is tough stuff, made all the more complicated by a chooser's experiences, environment, and condition. New results from BEACON suggest that mate availability (or lack thereof) and age interact to affect female mate choice and male sexual signaling.

The study consisted of two parts:

1. field surveys which determined natural, seasonal variation in mate availability in wild threespine stickleback fish, and

2. laboratory experiments which tracked both female mating decisions and male sexual signals in response to time and the sex ratio of their tanks, either male-biased or female-biased (From the female perspective, this translates to many vs. few mates available, respectively)

The researchers found that males from both sex ratio treatments were reddest late in life, although they competed most for females early in life. Females grew more responsive to courtship with time, and those experiencing a female-biased sex ratio, where mates are rare, relaxed their mating decisions to become less choosy late in life.

Such flexibility in behavior could buffer populations from the potentially negative effects of environmental change, allowing for reproduction even when preferred mates are rare and time is short.

Find it online to read more: Tinghitella, R. M., Weigel, E., Head, M., & Boughman, J.W. (In Press). Flexible mate choice when mates are rare and time is short. *Ecology and Evolution.*

Communicate with BEACON: Wiki and Talks

Write on the redesigned BEACON Wiki: Log into the BEACON intranet and you will receive an email with instructions on how to complete the activation of your wiki account (check your spam folder!). Complete those steps and you're ready to use our Wiki!

Give a BEACON talk: BEACON talks are fun, a great way to share your ideas with others, and an interesting forum for feedback. All BEACON members are welcome to give talks. Email Danielle Whittaker (djwhitta@msu.edu) for details.

Curious About Submitting Content?

New to BEACON? Veteran BEACONite? Here's how to submit possible content to the newsletter:

1. Do what you're already doing: Log into the BEACON Intranet (accessible through the BEACON site: http://beacon-center.org, at the "For Current Members" tab.) Then go to the "Outputs and Activities" tab at the top banner, and fill in information about your papers published, grants received, etc. New entries will be flagged automatically. The more current, the better!

2. Tweet about it. Tweet about what you'd like to cover as it happens to @BEACON_Center with the hashtag #news. We'll see it, and so will others!

3. Email content directly. Please email weigelem@msu.edu if you've got content you'd like to highlight that doesn't fit into the website categories.