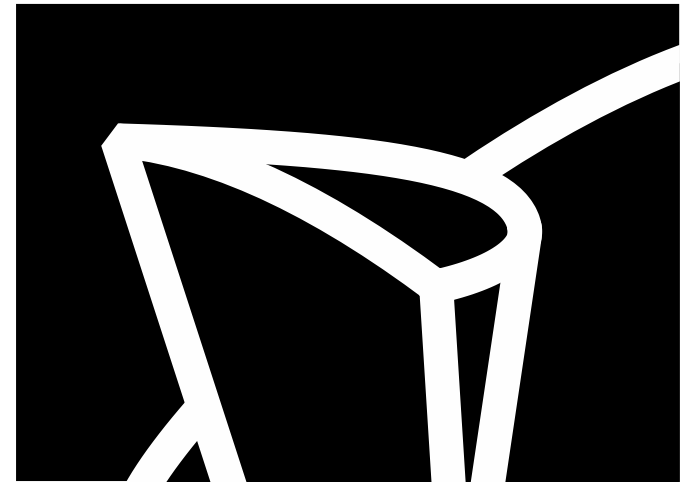


Research, collections and citizen science

J. Andrés López
University of Alaska Museum



Citizen science

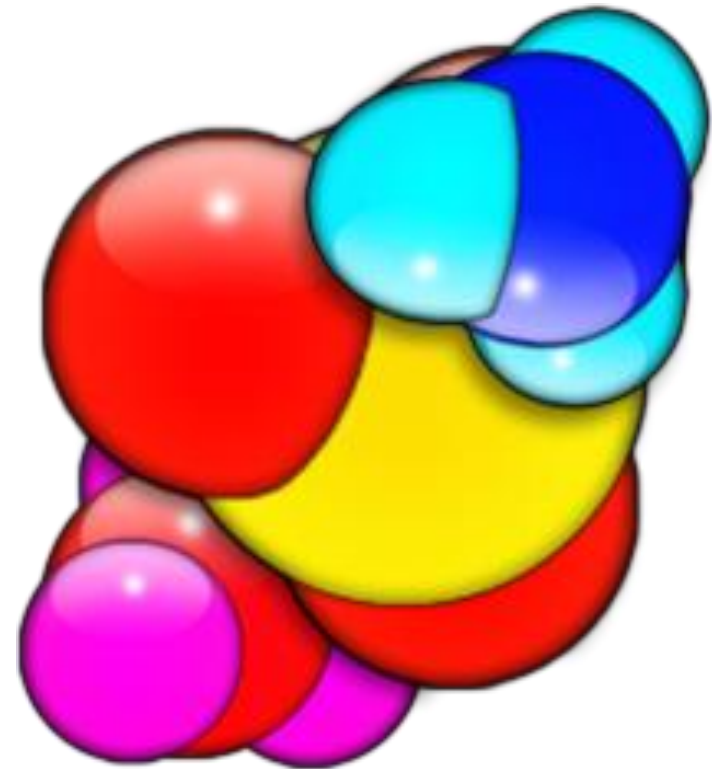
- Research activity advanced in part or in whole by nonprofessionals
- Broad range of possibilities and examples...

simple to complex

- simplest ('crowd sourcing'):



SETI@Home



Folding@Home

simple to complex

- more involved, mental engagement:

The screenshot shows the Galaxy Zoo website with a dark background. At the top, there are navigation links: CLASSIFY, STORY, SCIENCE, GALAXY ZOO (in a green banner), DISCUSS, PROFILE, and LANGUAGE. Below these are social media icons for Facebook, Twitter, and YouTube. The main heading reads "Few have witnessed what you're about to see" with a subtext: "Experience a privileged glimpse of the distant universe as observed by the SDSS, the Hubble Space Telescope, and UKIRT". A large image of a galaxy is featured, with the text "Classify Galaxies" and a description: "To understand how galaxies formed we need your help to classify them according to their shapes. If you're quick, you may even be the first person to see the galaxies you're asked to classify." A green button labeled "Begin Classifying" is visible. At the bottom, there are two links: "How Do Galaxies Form?" and "History of Galaxy Zoo".

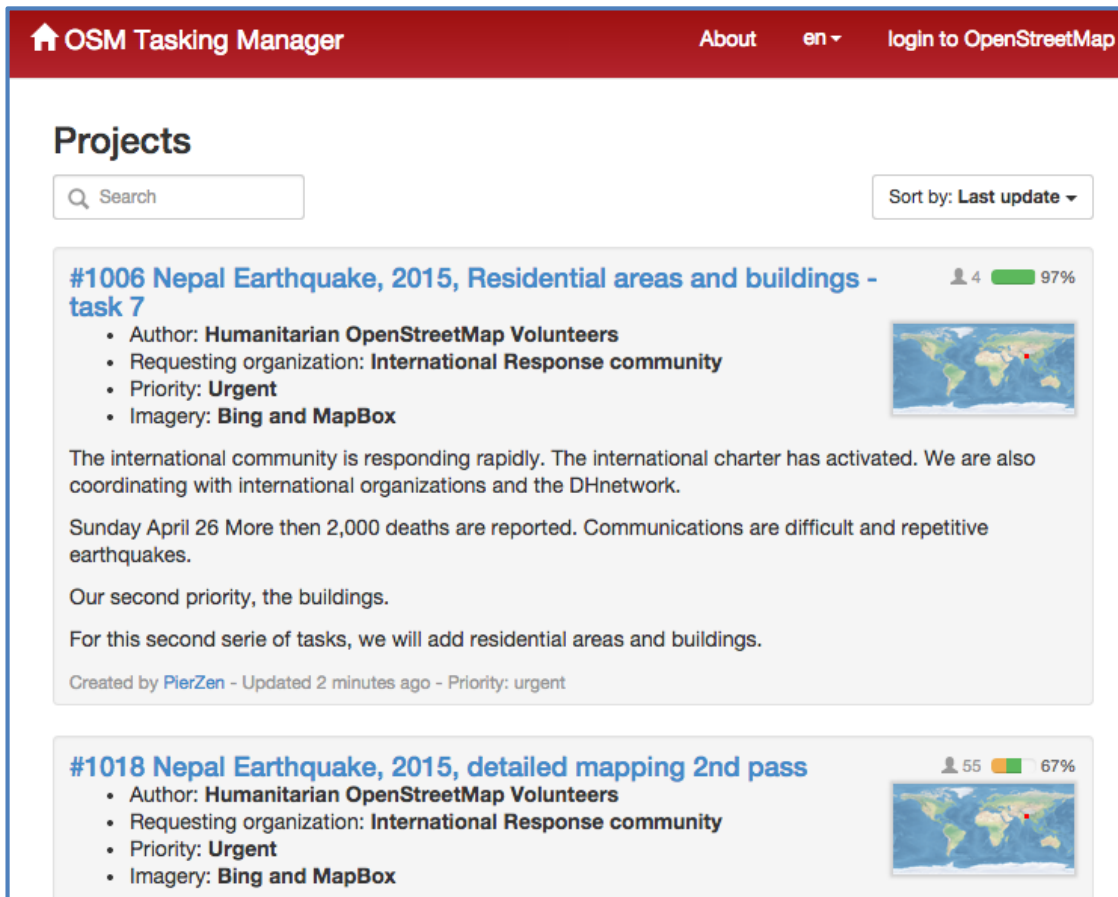
Galaxy Zoo

The screenshot shows the eBird website with a light blue and white color scheme. At the top, there is the eBird logo, a ZEISS logo with the tagline "We make it visible.", and a large image of a bird in flight. Below the logo is a navigation bar with links: Home, About, Submit Observations, Explore Data, My eBird, and Help. A link for "Sign In or Register as a New User" is also present. The main heading reads "Welcome to eBird" with the tagline "Birding in the 21st Century." Below this is a promotional banner for "The Cornell Lab of Ornithology GLOBAL BIG DAY MAY 9 2015" with the text "Every bird counts. Support conservation." and a green "Learn More" button. To the right of the banner is a map of the world with various birds. Below the banner is a "News and Features" section with the heading "eBirding the World Big Year - April Update" and the date "3 May 2015". The text describes Noah Strycker's attempt to become the first person to see 5,000 species of birds in one calendar year. A small image of a bird is shown next to the text. To the right of the news section is a "Help Support eBird" section with a "Donate Now" button. At the bottom right, there is a "BirdCast" logo with the tagline "Real-Time Bird Migration Forecasts" and an image of a bird in flight over a globe.

eBird

simple to complex

- engagement in question, participation in observations (and analyses):



The screenshot shows the OSM Tasking Manager interface. At the top, there is a red navigation bar with the text "OSM Tasking Manager", "About", "en", and "login to OpenStreetMap". Below the navigation bar, the "Projects" section is visible. It includes a search bar and a "Sort by: Last update" dropdown menu. Two project cards are shown. The first card is for "#1006 Nepal Earthquake, 2015, Residential areas and buildings - task 7". It lists the author as "Humanitarian OpenStreetMap Volunteers", the requesting organization as "International Response community", the priority as "Urgent", and the imagery as "Bing and MapBox". It also shows a progress bar with 4 users and 97% completion. The second card is for "#1018 Nepal Earthquake, 2015, detailed mapping 2nd pass", showing 55 users and 67% completion. Both cards include a world map with a red dot indicating the location of Nepal.

OpenStreetMap

‘Community Science’

Why do it?

- Science (?)
 - advancing the field (**incremental**)
 - capturing and/or standardizing relevant data - human “OCR”
 - answering open questions (**transformational**)
 - assembling and analyzing a ‘designed’ dataset

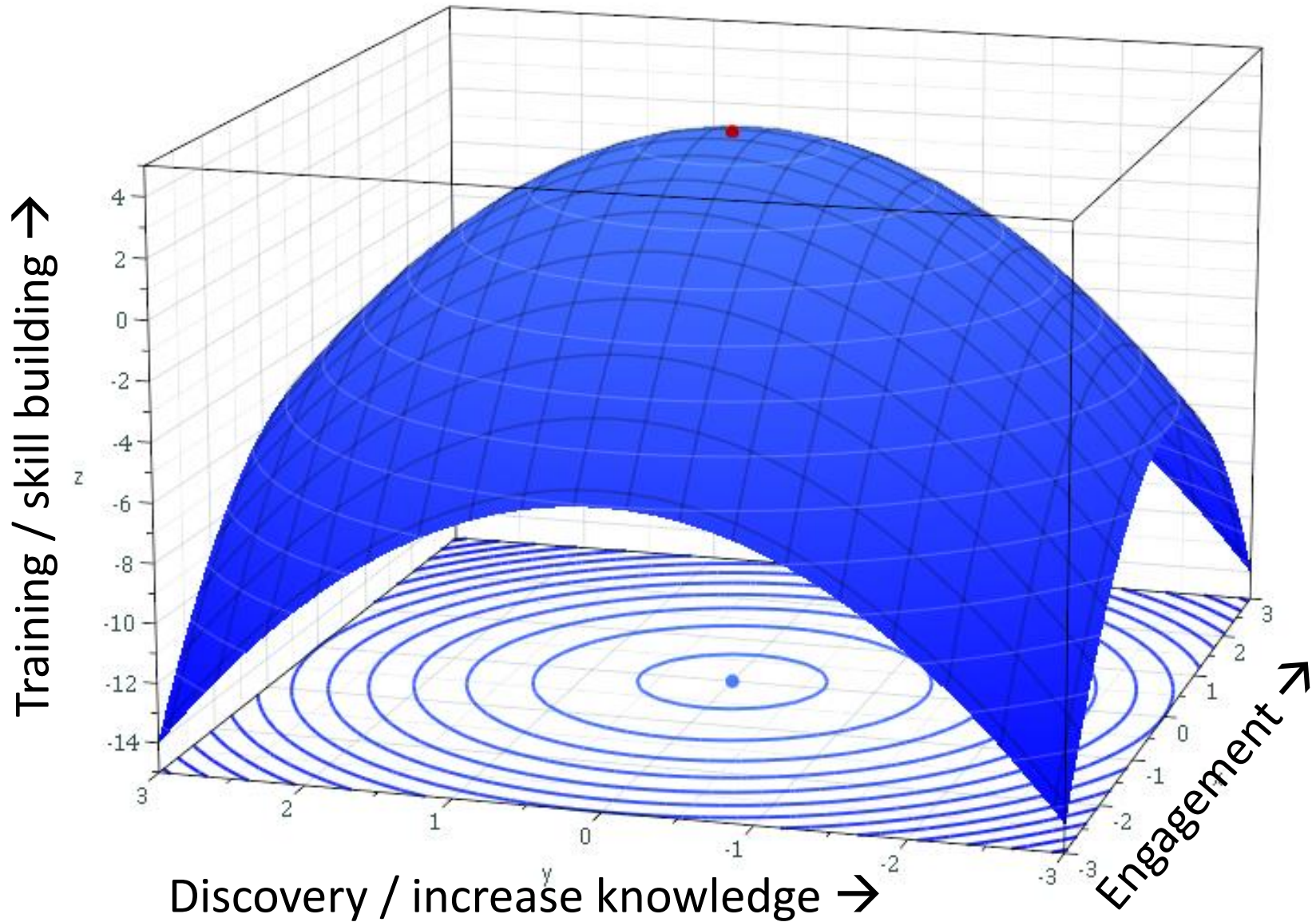
Why do it?

- Engagement
 - Foster interest in biodiversity - BioBlitz
 - Improve understanding of 'science' and the research enterprise
 - Development

Why do it?

- Capacity building / training
 - build public knowledge
 - training in specialized skills – school science projects, research experience opportunities

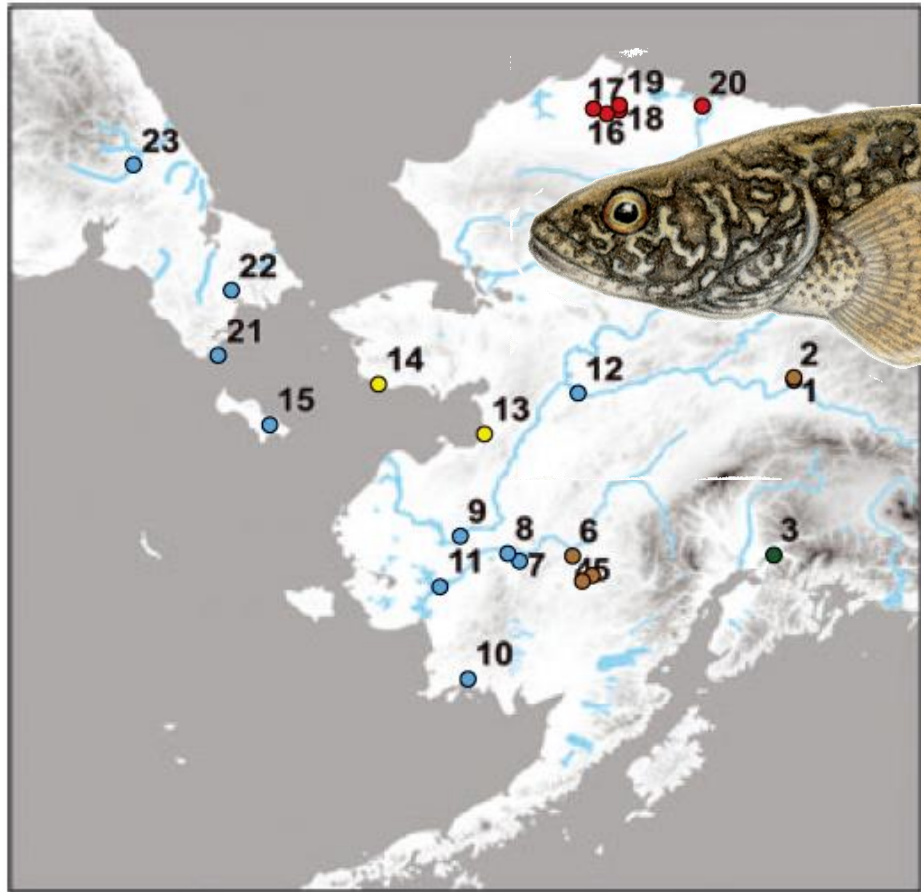
The optimization



Identifying, weighting the true goal(s)

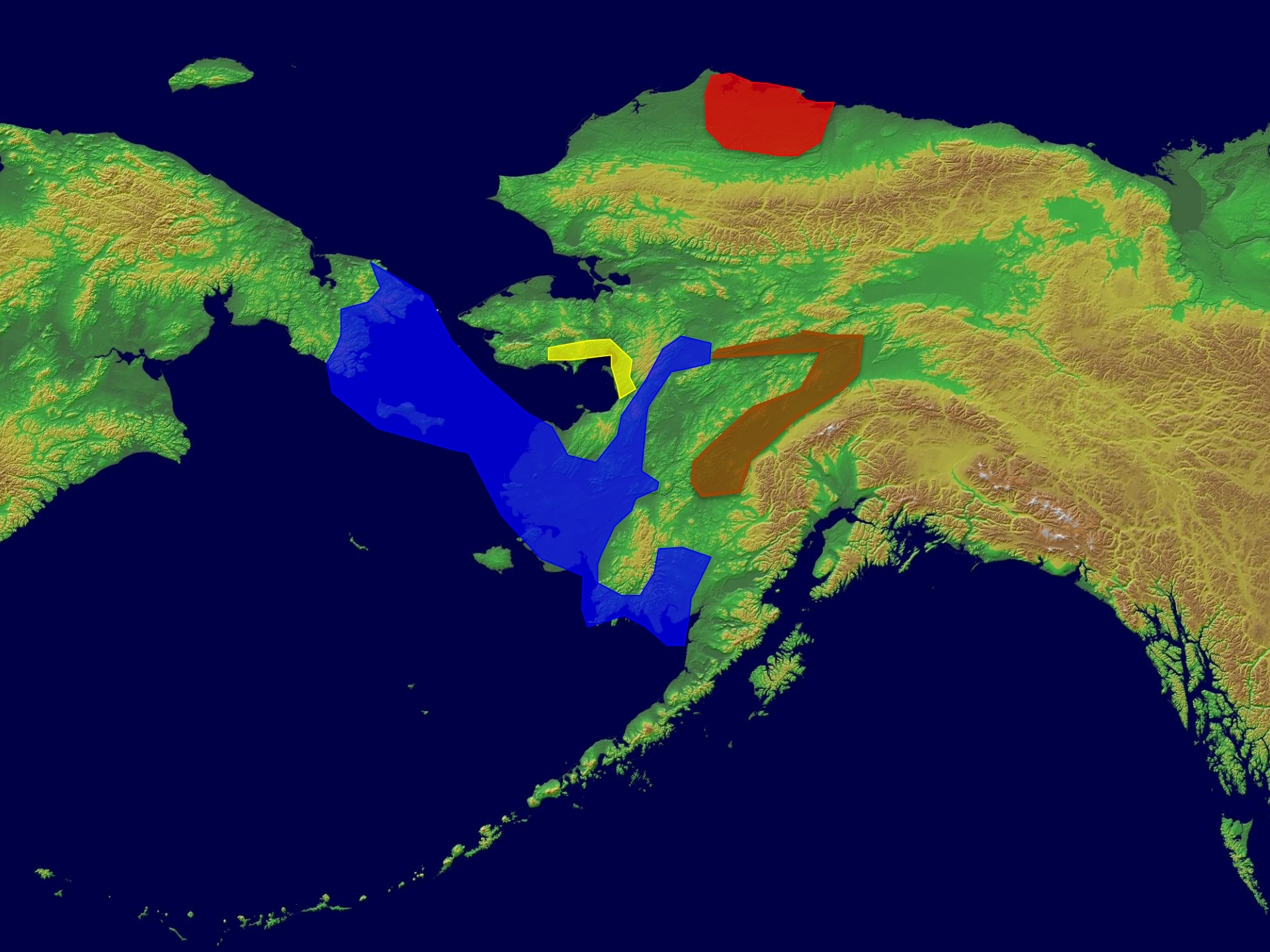
- Determine true investment
 - Recruitment
 - Training
 - Support
- Establish useful output metrics
 - Knowledge
 - Resources
 - Capacity
 - Broader community participation, investment

biogeography – phylogeography



© Justin Sipiorski

- Specialized training
- Engagement
- Incremental knowledge



Living figures....



RESEARCH ARTICLE

REVISED Sub-strains of *Drosophila* Canton-S differ markedly in their locomotor behavior [v2; ref status: indexed, <http://f1000r.es/57i>]

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v2 First published: 30 Jul 2014, 3:176 (doi: [10.12688/f1000research.4263.1](https://doi.org/10.12688/f1000research.4263.1))
Latest published: 21 Apr 2015, 3:176 (doi: [10.12688/f1000research.4263.2](https://doi.org/10.12688/f1000research.4263.2))

Abstract

We collected five sub-strains of the standard laboratory wild-type *Drosophila melanogaster* Canton Special (CS) and analyzed their walking behavior in Buridan's paradigm using the CeTrAn software. According to twelve different aspects of their behavior, the sub-strains fit into three groups. The group

Open Peer Review

Referee Status:

Invited Referees

1 2 3

Select date to see other versions

Select a date...

Submit New Data

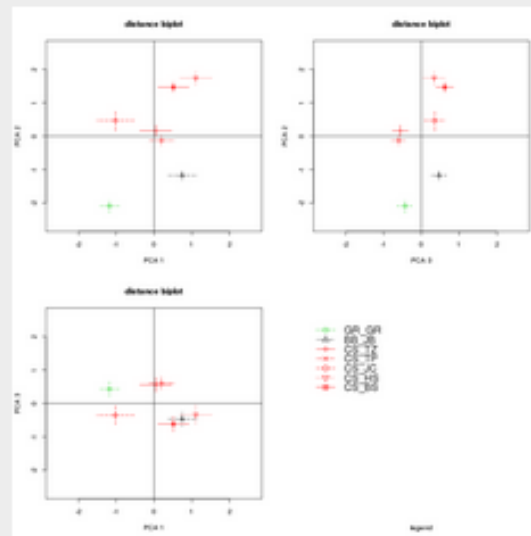


Figure 4. Updating principal component analysis of Canton S strains.

Results from the PCA obtained using the same analysis as for [Figure 2](#), but with data uploaded from different laboratories. The version of this figure on the *F1000Research* site is 'living'; it will automatically re-plot as and when new data for other Canton S strains are submitted, and users can visualize previous versions of this figure. The conclusions of this article only relate to the data available at the time of publication. The prefixes in the key are the initials of the data contributor (except CS_ strains, which were tested by Julien Colomb); full names and affiliations can be found in the figure legend of the article on the *F1000Research* site. The suffixes denote the initials of the principal investigators from where each sub-strain was sourced. The BB_JB (Jose Botella) strain was ordered from the Bloomington stock center (stock #1) approx. seven years ago. BB_JB falls within the range of variability seen so

...

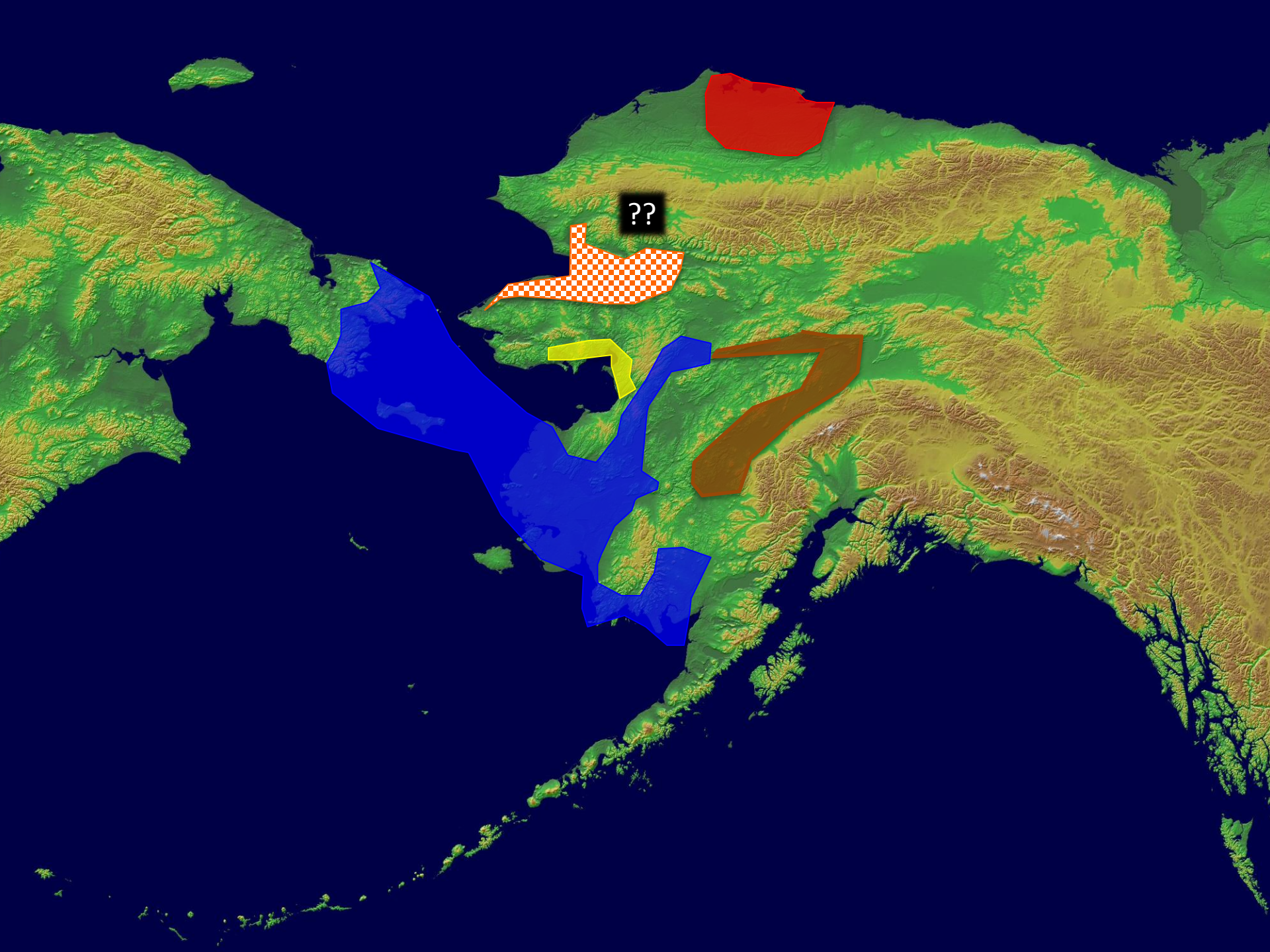
GR_GR: Added on 22 Apr 2015 by Gregg Roman, Stefani Garcia and Miguel de la Flor at Department of Biology and Biochemistry, University of Houston, TX, USA. DOI: 10.5256/f1000research.4263.d46290 | [Download data](#) | [Cite data](#)

BB_JB: Added on 21 Apr 2015 by Björn Brembs at Institute of Zoology – Neurogenetics, Universität Regensburg, Germany. DOI: 10.5256/f1000research.4263.d46234 | [Download data](#) | [Cite data](#)

CS_TZ: Added on 30 Jul 2014 by Julien Colomb at Institute of Biology – Neurobiology, Freie Universität, Berlin, Germany. DOI: 10.5256/f1000research.4263.d46232 | [Download data](#) | [Cite data](#)

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“right” investment, “right” expectations

