

SCIENCE COMMUNICATION TOOLS

to add to your telemetry toolbox

Natalie Sopinka, PhD



@phishdoc #3rdICFT

July 13, 2015

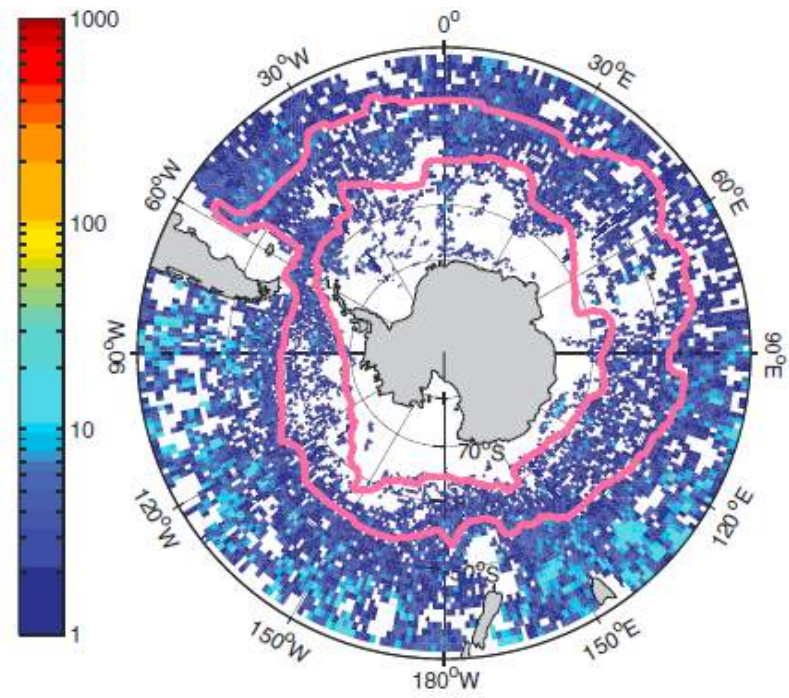
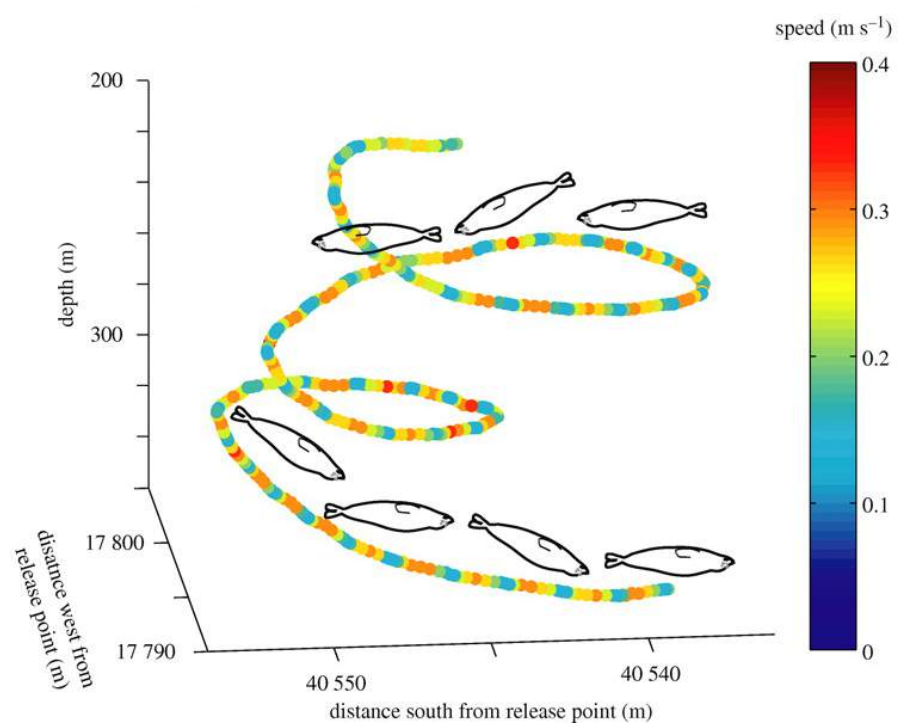
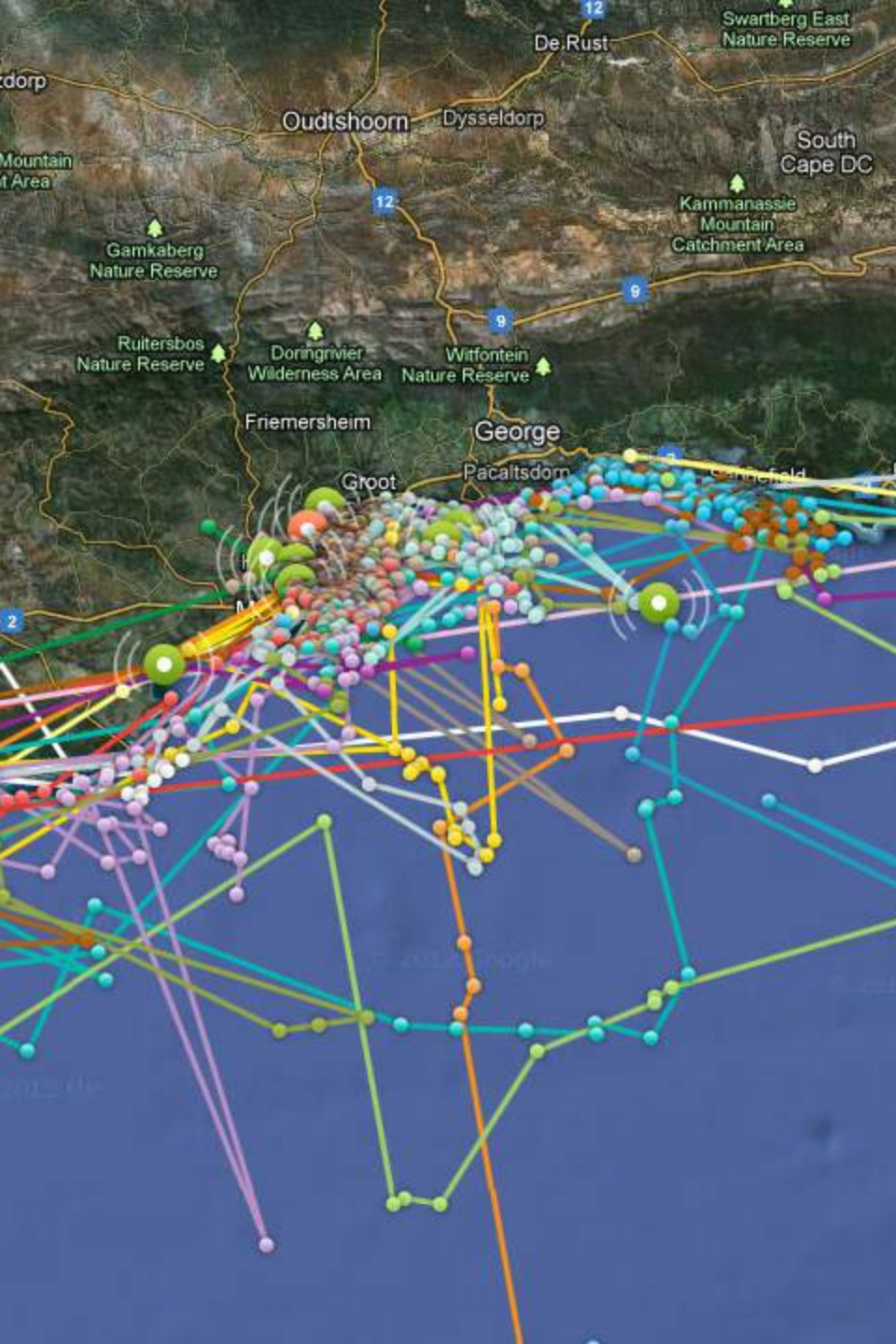
International Conference on Fish Telemetry
Halifax, Nova Scotia, Canada



**NSERC
CRSNG**

The logo for the Ocean Tracking Network, featuring a stylized blue and green wave above the text "OCEAN TRACKING NETWORK".

**OCEAN
TRACKING NETWORK**



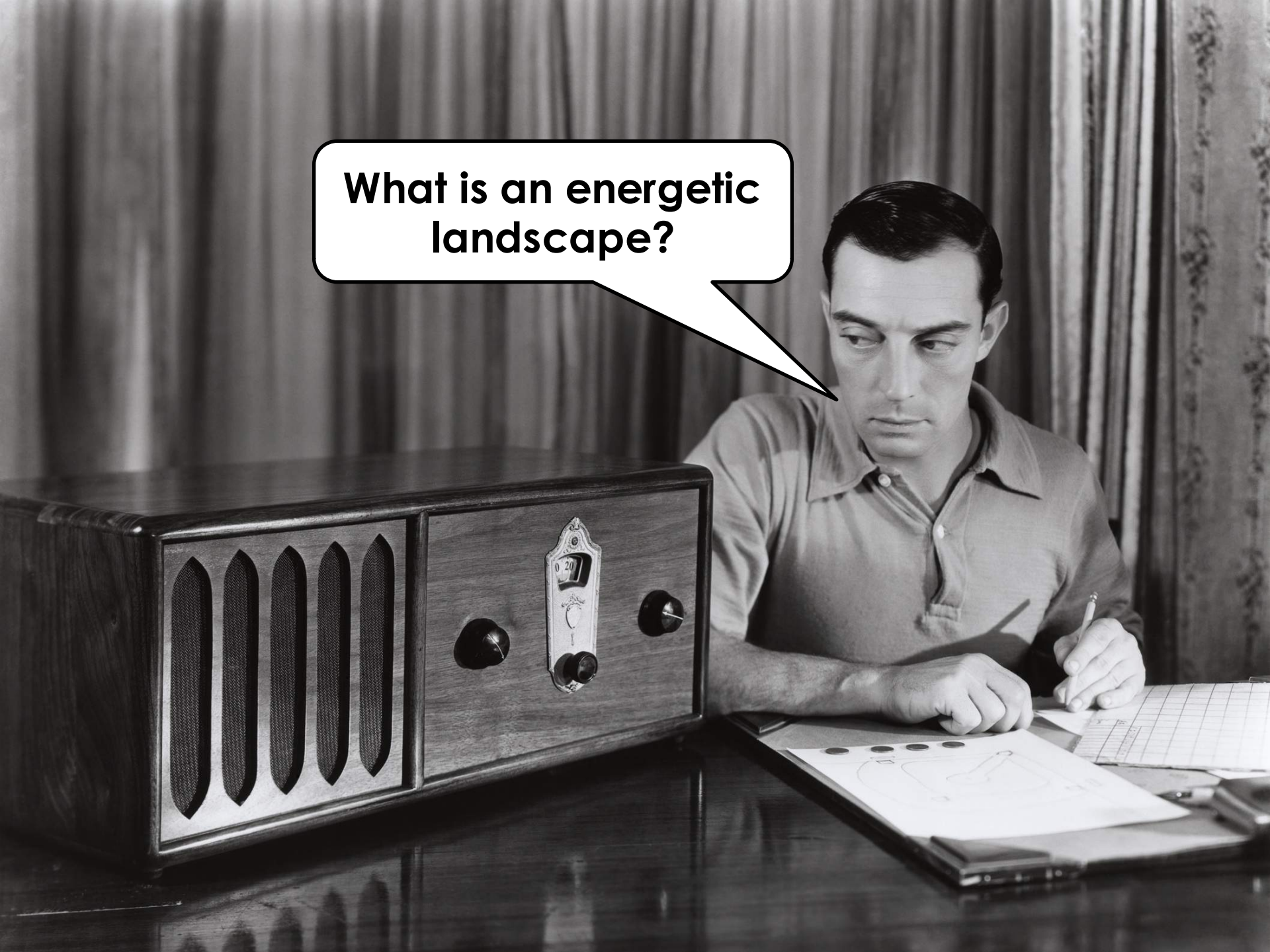




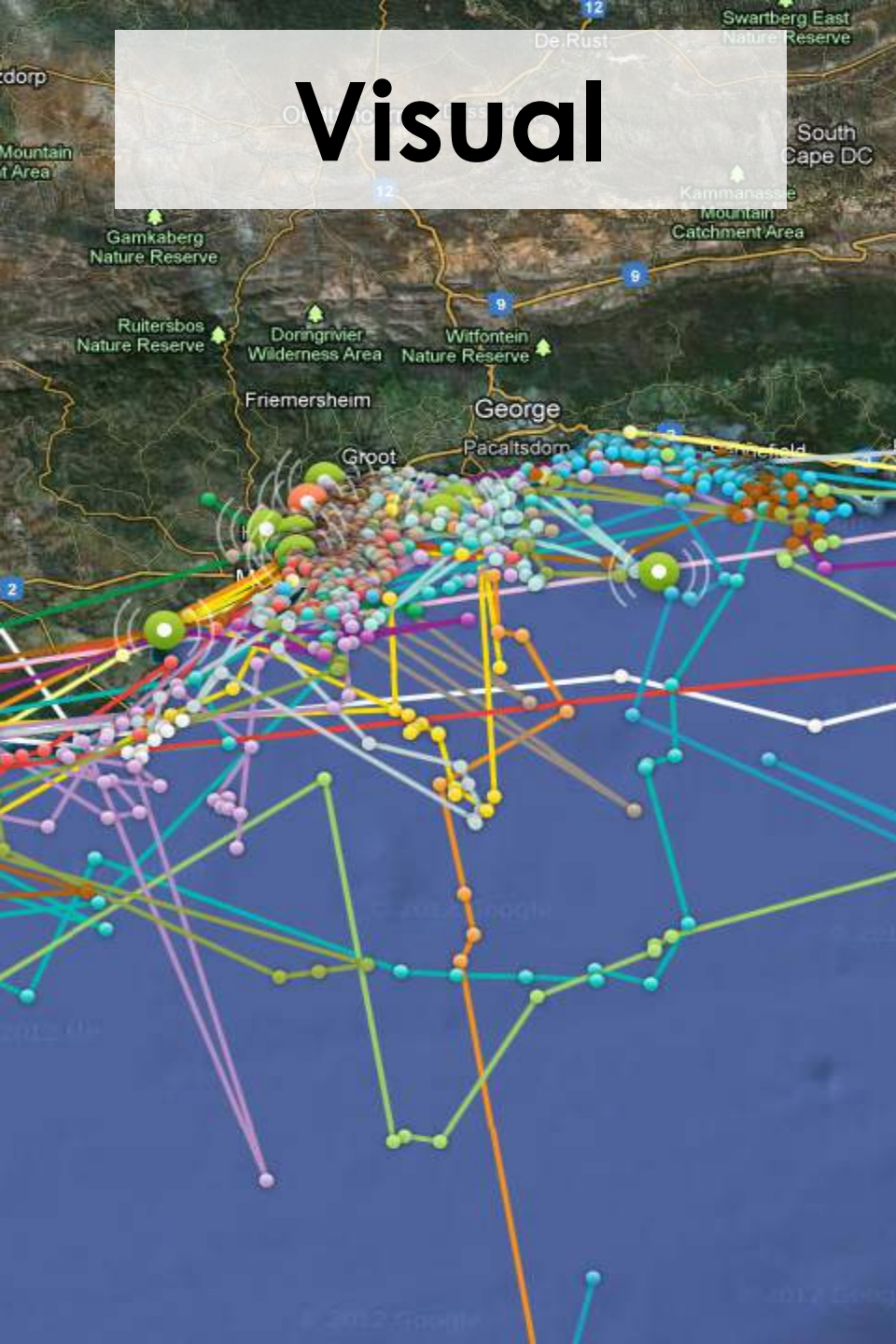
Is it a map?



**What is an energetic
landscape?**



Visual



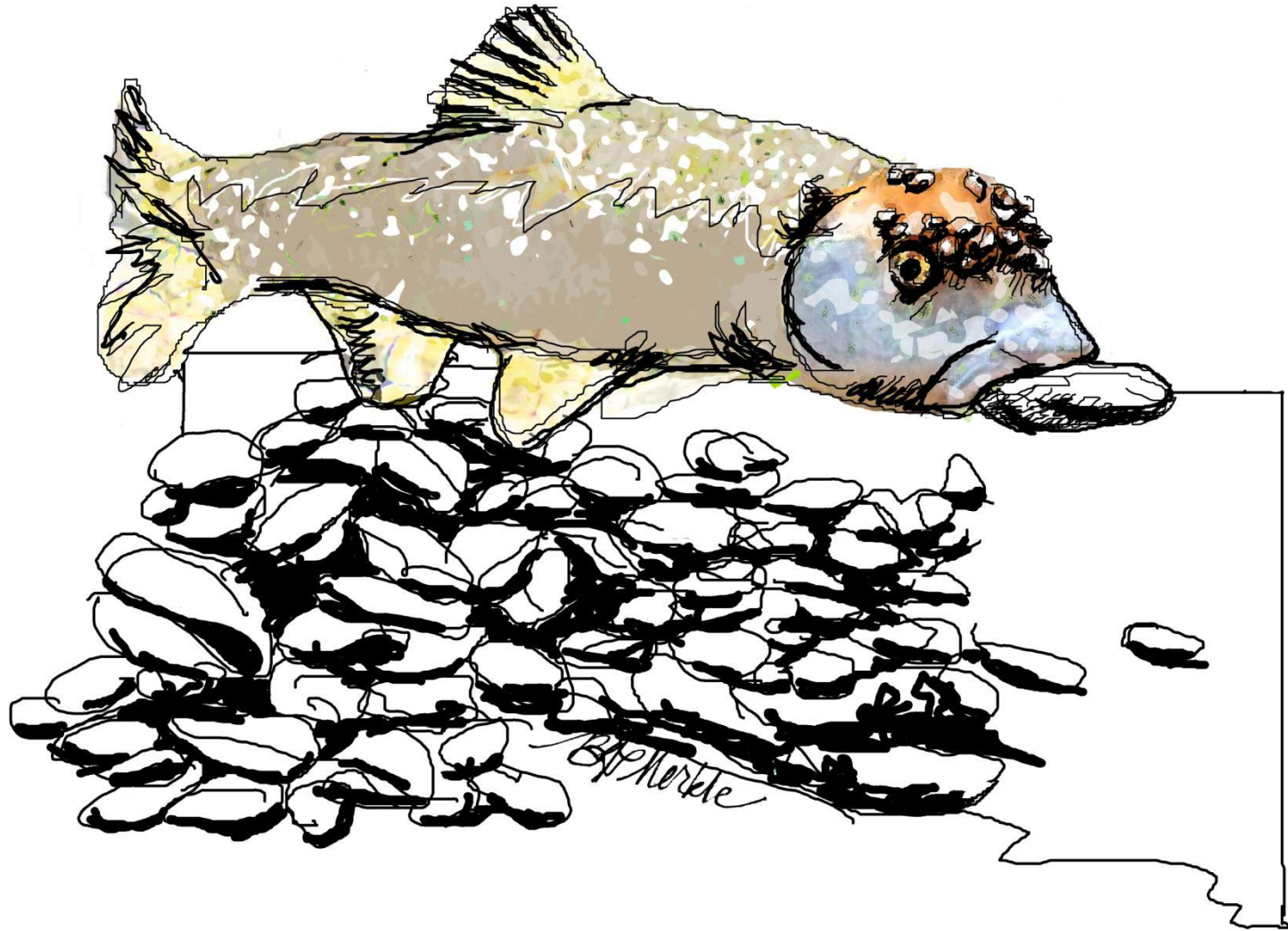
Audio



Visual



SKETCHING



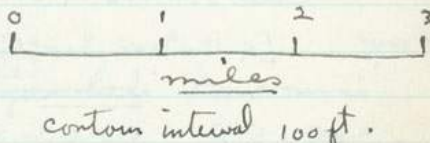
P1915

3 mi. N.E. Coulterville, Mariposa Co., Calif. 368.
El. 3200 ft. June 9, 1915.

same about holes seem to have begun working last night (warmer weather is now coming on) but no Perodipus were caught. Only one has been taken here so far. Traps lines at this station.

Traps in red
transits in blue
W. Sonora in yellow

yellow pine
+
fast pit - drift
Carpenter



N
↑

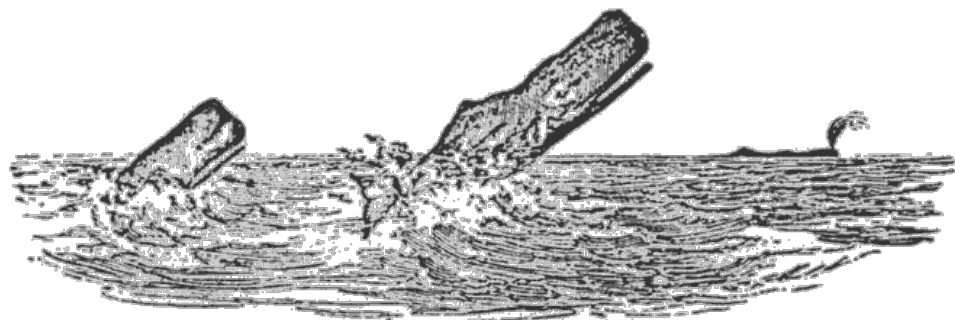
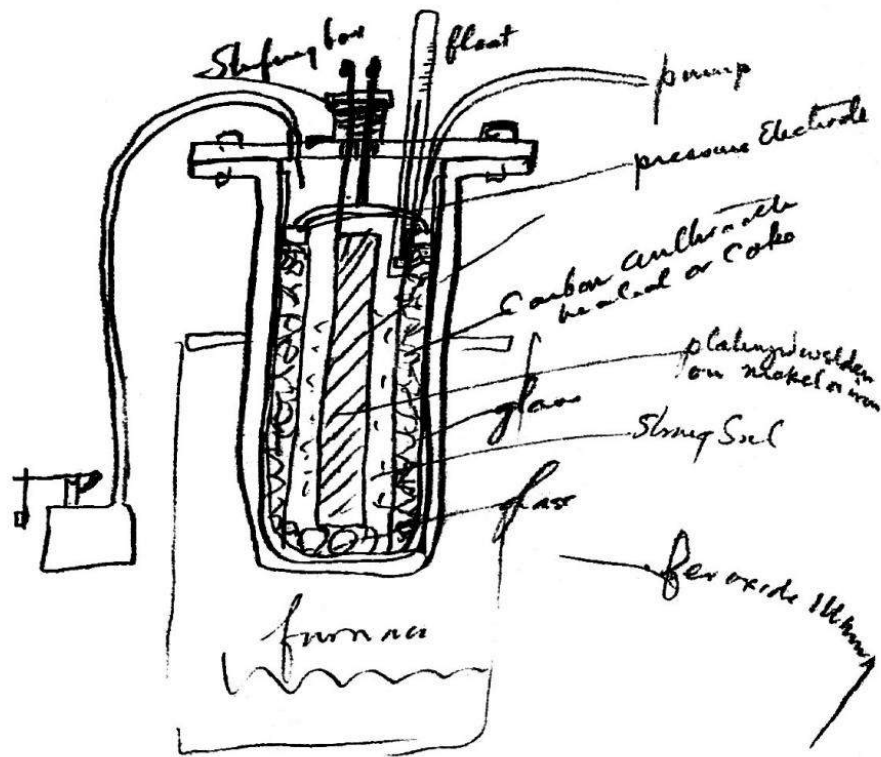
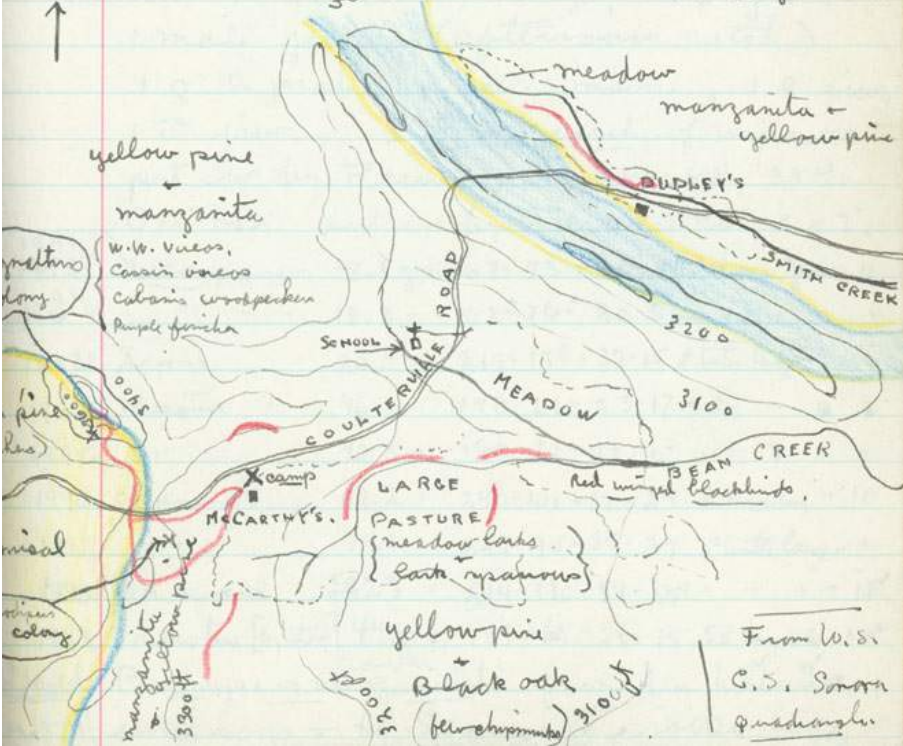
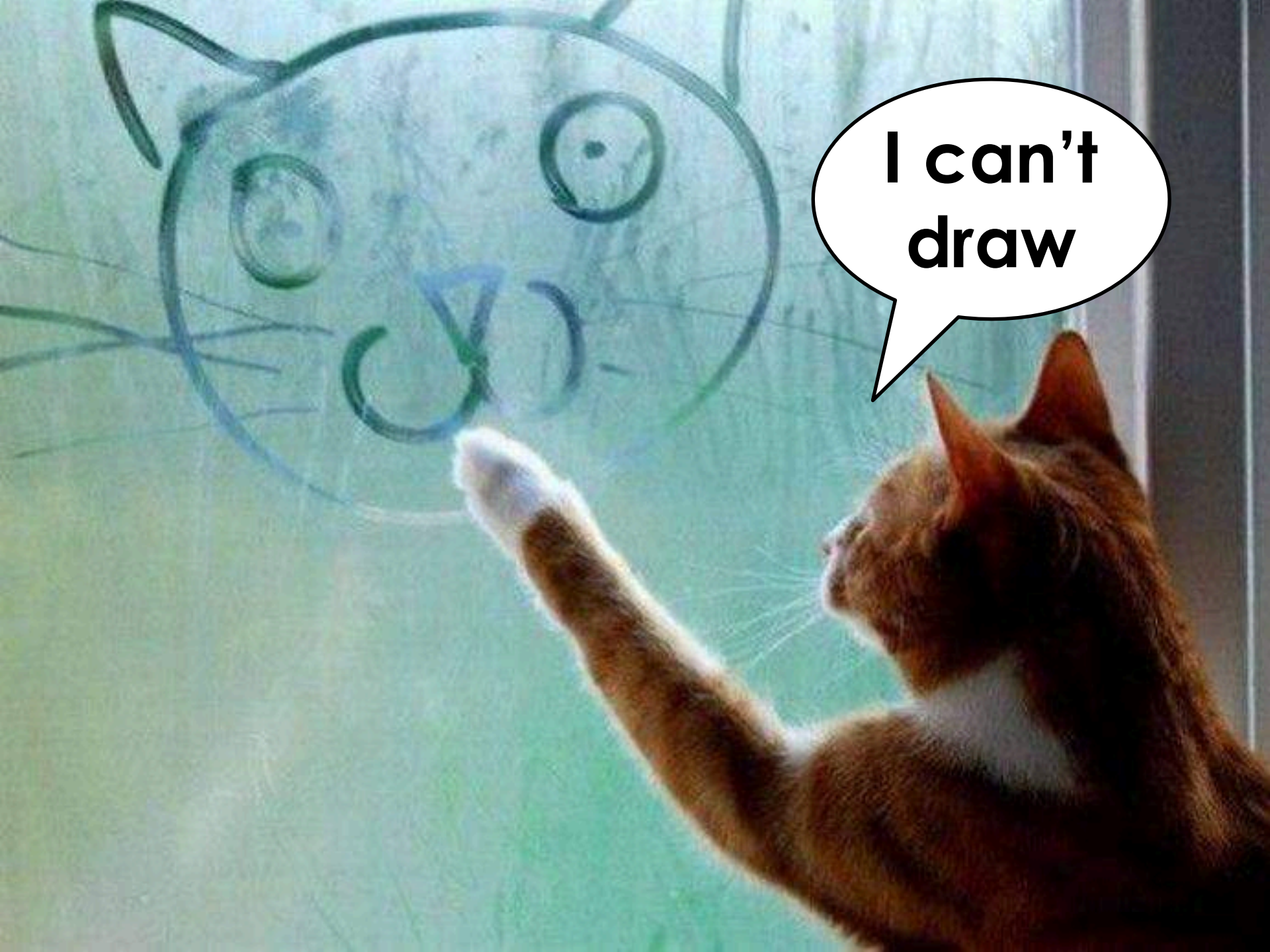


Fig. 1.

Fig. 2.

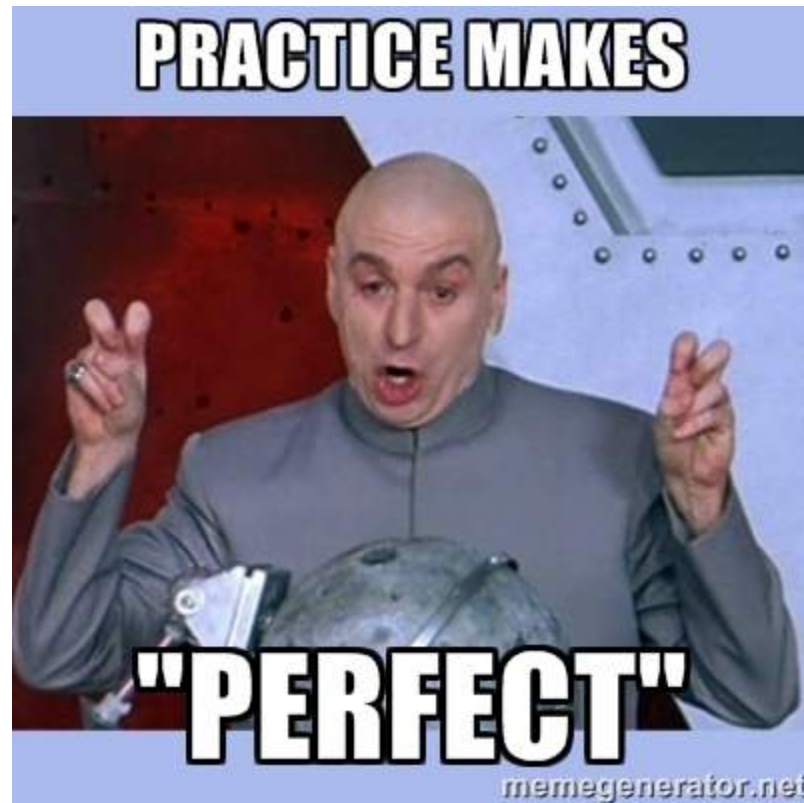
Fig. 3.



**I can't
draw**

Yes you can draw!

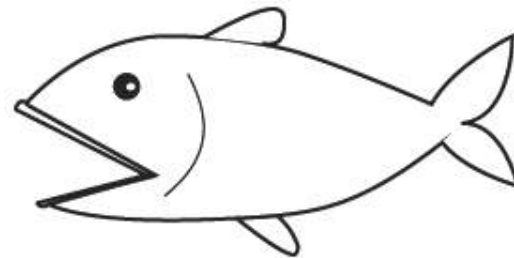
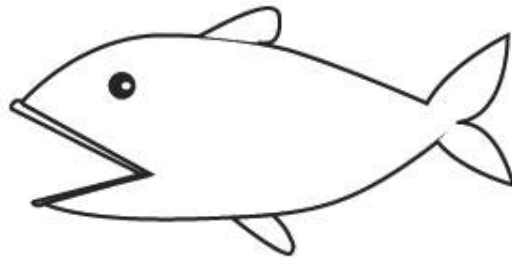
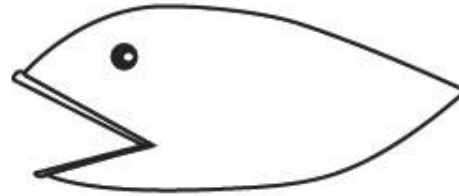
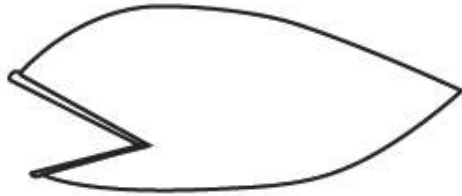
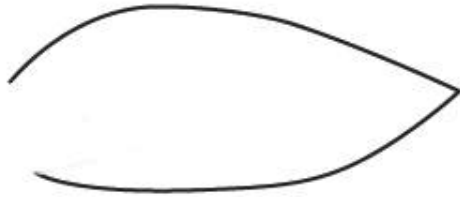
- practice, practice, practice
- mind over matter



Yes you can draw!

- practice, practice, practice
- mind over matter
- Google it

“how to draw a fish”





2 How2DrawAnimals Videos Playlists Channels Discussion About

How To Draw A Swordfish



6:43

How to Draw a Swordfish
2,957 views · 3 months ago

How To Draw A Hare



8:00

How to Draw a Hare
3,473 views · 3 months ago

How To Draw A Cardinal



8:31

How to Draw a Cardinal
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How To Draw An Alligator



9:00

How to Draw an Alligator
4,890 views · 4 months ago

How To Draw A Praying Mantis



7:29

How to Draw a Praying Mantis
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8:00

How to Draw a Bighorn Ram
3,357 views · 4 months ago

How To Draw A Pigeon



7:19

How to Draw a Pigeon
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How To Draw A Griffin (Gryphon)



8:59

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7,526 views · 5 months ago

How To Draw A Clownfish



6:53

How to Draw a Clownfish
4,922 views · 5 months ago

How To Draw A Wombat



7:29

How to Draw a Wombat
2,056 views · 5 months ago

How To Draw A Fennec Fox



8:30

How to Draw a Fennec Fox
4,073 views · 5 months ago

How To Draw A Beaver



8:33

How to Draw a Beaver
2,866 views · 5 months ago


How To Draw A Hermit Crab



8:28

How to Draw a Hermit Crab
2,667 views · 6 months ago

How To Draw A Dog (Doberman Pinscher)



8:41

How to Draw a Dog (Doberman Pinscher)
9,499 views · 6 months ago

How To Draw A Cockatiel



8:59

How to Draw a Cockatiel
6,175 views · 6 months ago

THE CommNatural NEWSLETTER

from Betham Garramon Merkle

April/May 2015



Tips & inspiration for incorporating drawing into science, education & daily life.

Spring has sprung!

In between spring snowstorms that dump feet of snow on my sprouting rhubarb, I've spotted sandhill cranes, meadowlarks, and bluebirds.

Recently, I've been busy discussing how to sketch when you're a 'non-artist' with a host of scientists and science communicators. So, this newsletter is going to focus on doing just that.

This month: spring into sketching

Enjoy the tips and ideas in this month's newsletter.



Contents

- **Sketching tip:**
Starting simply
- **Artful Science:** A fascinating SciArt collaboration
- **Artful Classrooms:**

The Crastina Column, July: Why scientists (even nonartists) should draw

Drawing is not an archaic skill; it is an essential part of the modern scientist's toolkit. From enhanced observation skills to correlation with professional eminence, the once-ubiquitous skill of scientific sketching is as relevant in the digital age as it was in the Renaissance. Science communicator/illustrator Bethann Garramon Merkle explains why.

BEAUTIFUL DATA: THE ART OF SCIENCE FIELD NOTES

Drawing sketches and creating conceptual diagrams to communicate science

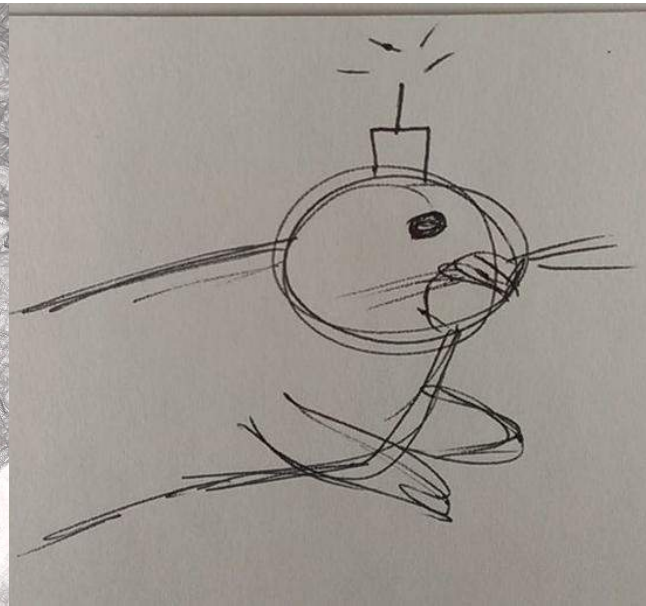
Drawing as a Way of Looking at the Natural World

Scientists As Artists: Extending The Tools Of observation

The first time paleontologist Robert Bakker examined a small one-of-a-kind dinosaur skull at the Cleveland Museum of Natural History, something about it puzzled him. And while he couldn't quite put his finger on what that something was, he was fairly sure it was not the skull of a gorgosaurus as its label indicated. So Bakker, adjunct curator of paleontology at the University of Colorado, Boulder, did what he always does— he began to draw, using a pencil to record each and every

Yes you can draw!

- practice, practice, practice
- mind over matter
- Google it
- you do you



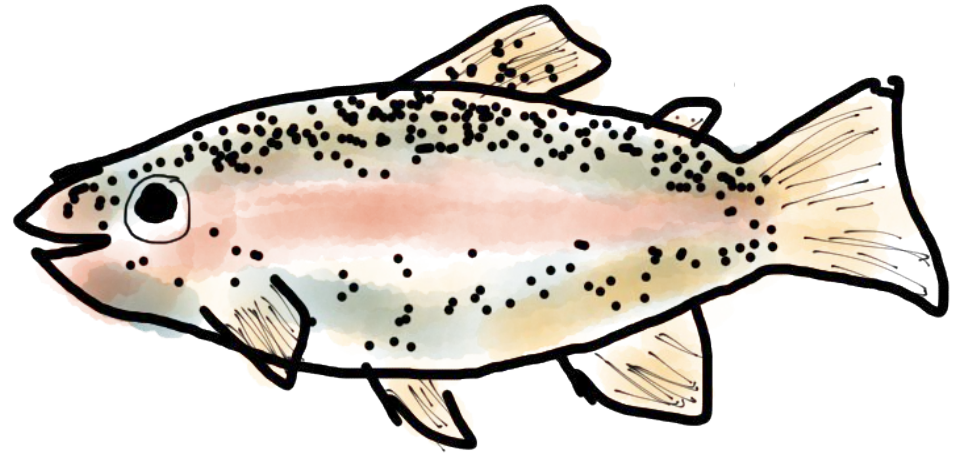
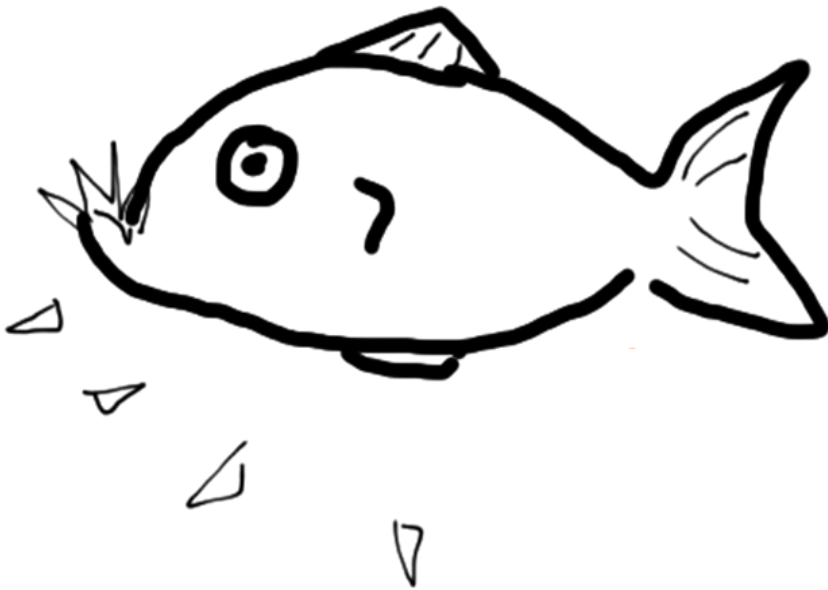
Sketching tools

- pencil, pen, felt-tip marker, crayon, etc.



Sketching tools

- tablet/phone + stylus pen/finger + app
(Concepts, Bamboo Paper, Sketchbook Express, Papyrus, Doodledroid)



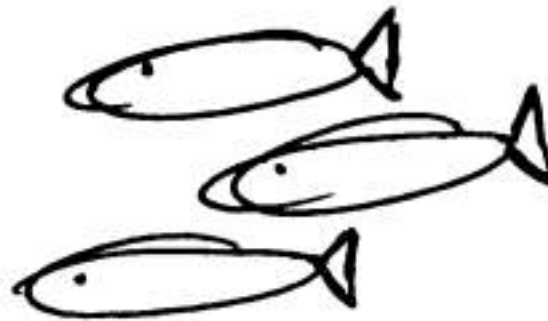
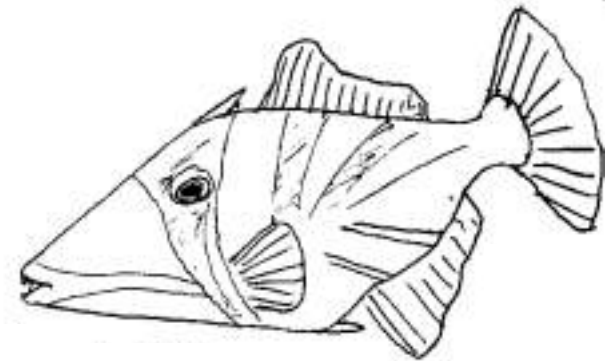
Sketching for science

- reach broader audiences

Sketching for science

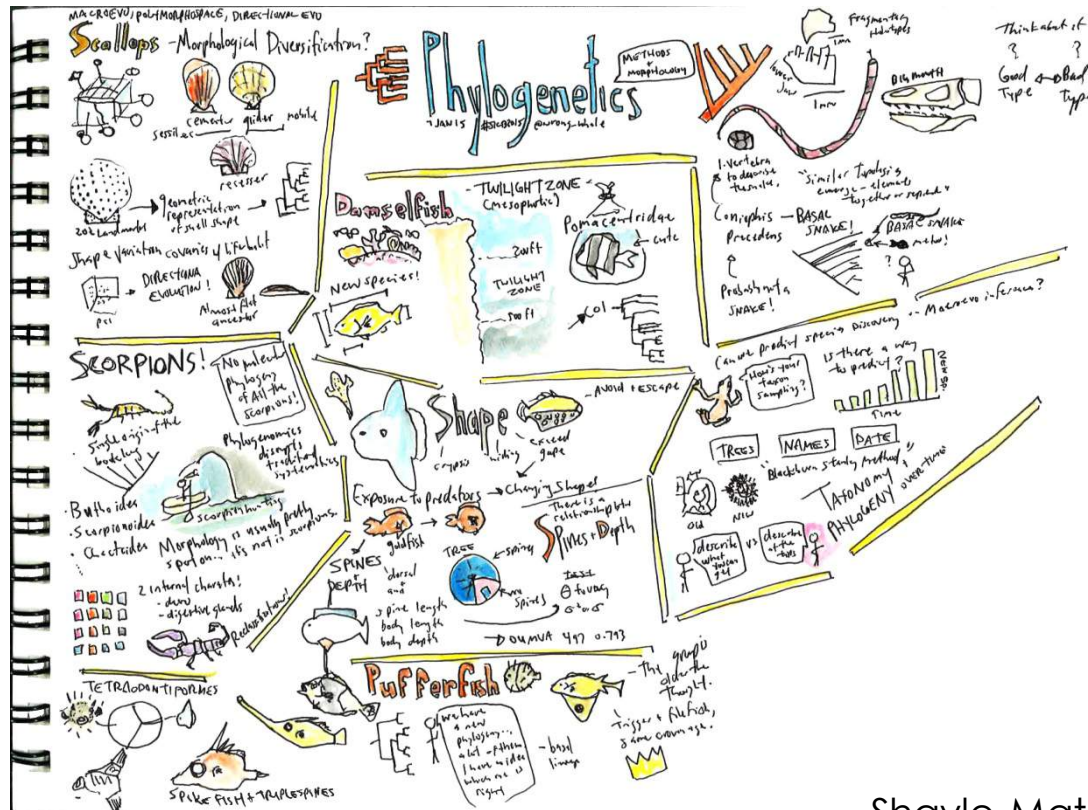
- reach broader audiences

English	fish
Japanese	sakana
Dutch	vissen
Spanish	pescados
Italian	pesci
French	poisson
Swedish	fisk
Hungarian	hal



Sketching for science

- reach broader audiences
- conference note taking

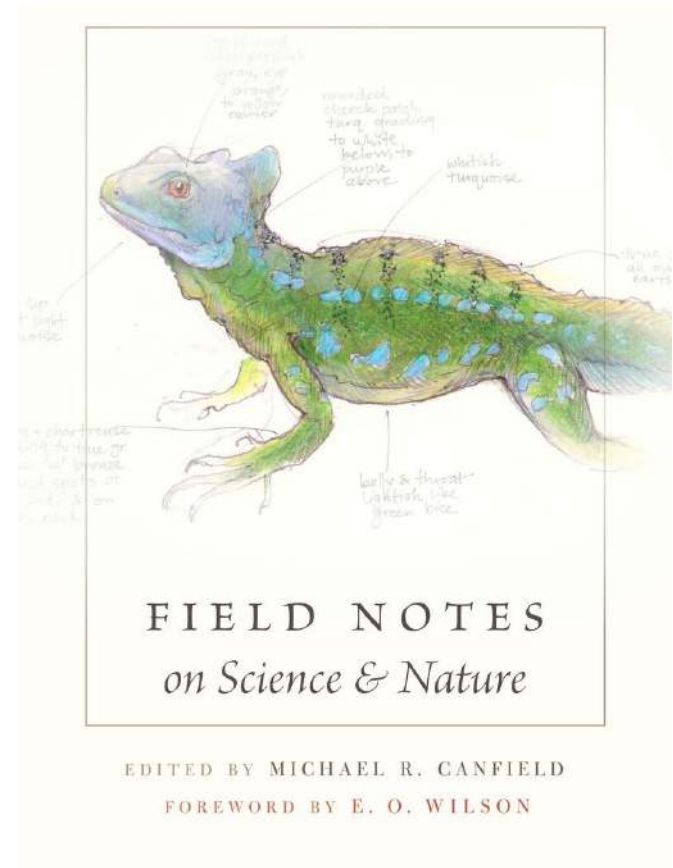


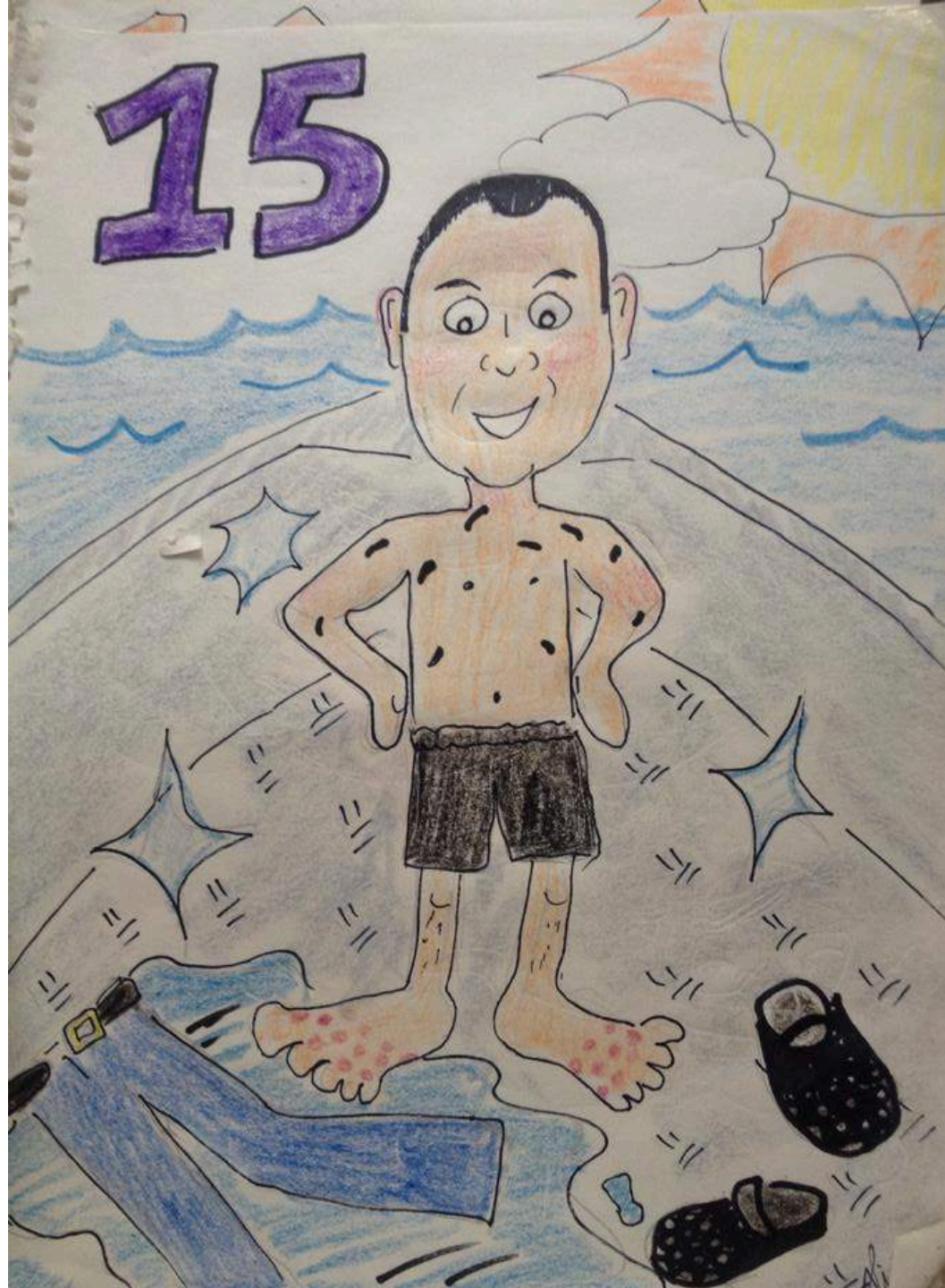
Sketching for science

- reach broader audiences
- conference note taking
- field/lab note taking

“Illustrated field notes can provide the basis for public conversations on science.”

Sandra Knapp





Sketching for science

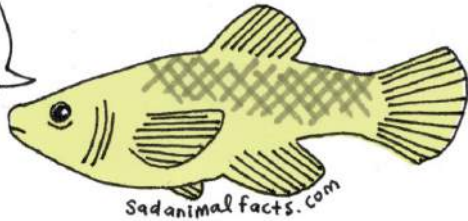
- reach broader audiences
- conference note taking
- field/lab note taking
- blogs, bulletins, brochures, etc.

Sketching for science

- reach broader audiences
- conference note taking
- field/lab note taking
- blogs, bulletins, brochures, etc.
- humour

MOSQUITO FISH
CAN ONLY COUNT
TO THREE

if you say
anything
about calculus
I'm going
to be sick.



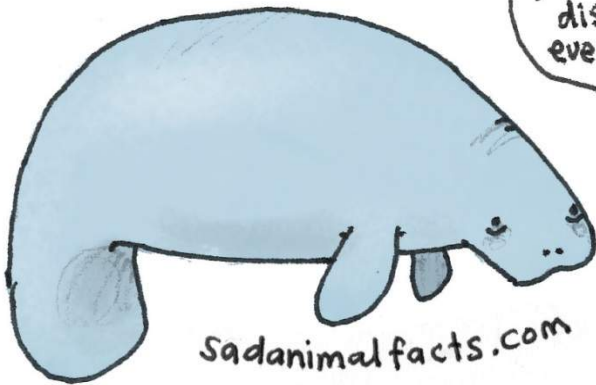
JELLY FISH HAVE
NO HEARTS

Sorry
not
sorry.



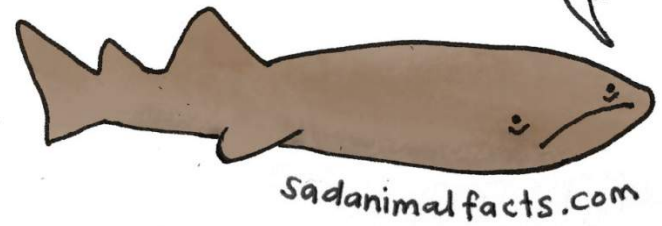
WHEN EARLY OCEAN EXPLORERS
THOUGHT THEY SAW MERMAIDS
THEY WERE ACTUALLY LOOKING
AT MANATEES

Sorry to
disappoint
everyone.



SHARKS LOSE A TOOTH A WEEK

I'm not
flossing.



Sketching for science

- reach broader audiences
- conference note taking
- field/lab note taking
- blogs, bulletins, brochures, etc.
- humour
- clarity & creativity

“I think the best way for any scientist to understand his or her science is through visualization,”

Barrett Klein

“...creating a good, unambiguous and information-rich diagrams requires time and imagination.”

Bill Dennison

“...the process itself seemed to clarify the science in the mind of the researcher.”

picturetolearn.org

Sketching for science

- reach broader audiences
- conference note taking
- field/lab note taking
- blogs, bulletins, brochures, etc.
- humour
- clarity & creativity
- generates collaboration

Buzz Hoot Roar

Buzz Hoot Roar is a graphics-driven blog that shares and/or explains a scientific concept in 300 words or less



Hoping to attract the ladies, male cichlid (*Lamprologus callipterus*) industriously hoard empty snail shells in Africa's Lake Tanganyika. Bigger is better, as females prefer to release their eggs in large shells collected by large males.



Three-spined sticklebacks males spend hours moving around mouthfuls of sand and collecting mouthfuls of algae. Sticky mucus (complete with an antibacterial protein called spiggin) secreted from the males' kidneys glues together the gathered algae to form hobbit hole-like nests—sometimes, sticklebacks with an eye for design add a red accent at the nest's entrance to catch a female's attention.

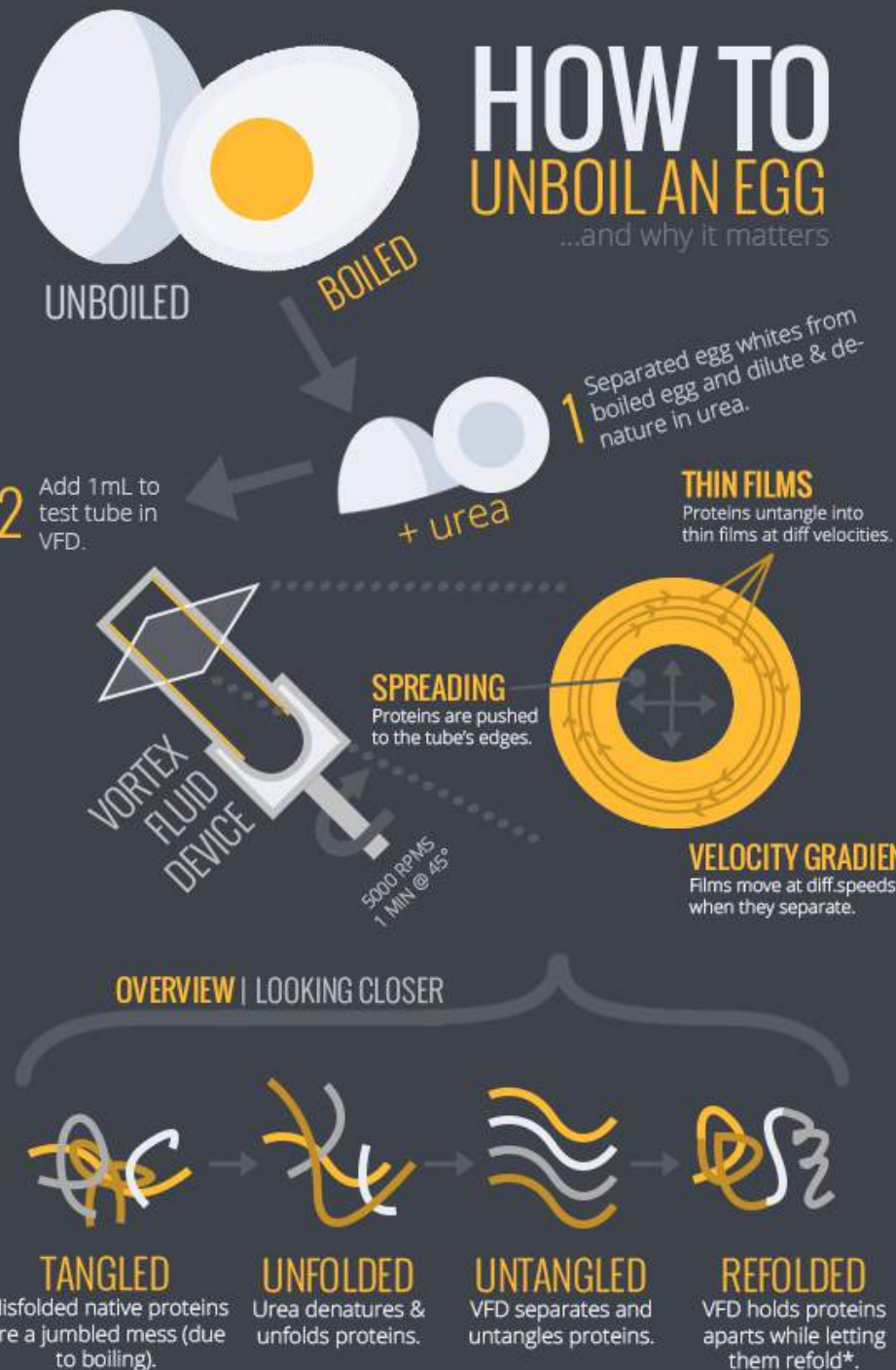


DRAW SCIENCE

take science articles,
make pictures.

Viputheshwar Sitaraman
graphic designer

www.drawscience.org



Sketching in a Network

- connect writers & sketchers
- host workshops/field trips/webinars
- create visual synthesis – infographics
- global dissemination



Audio



PODCASTS



Podcasts for science

- reach broader audiences



Podcasts for science

- reach broader audiences
- article summaries
(tmel.wordpress.com)

■ Hear our papers!

No time to read? Listen to these 60-second podcasts of some of our recent papers.



Tamburello, N., Côté, I.M. and Dulvy, N.K. 2015. Predator-prey body size asymmetries and the scaling of animal space use. *American Naturalist*, in press.
Voice: Natascia



Tamburello, N. and Côté, I.M. 2015. Movement ecology of Indo-Pacific lionfish on Caribbean coral reefs and its implications for invasion dynamics. *Biological Invasions* 17, 1639-1653. *Voice: Natascia*



Sumaila, U.R., Lam, V., Miller, D.D., The, L., Cheung, W.W.L., Watson, R., Pauly, D., Zeller, D., Rogers, A., Côté, I.M., Roberts, C.M. 2015. Winners and losers in a world where the high seas is closed to fishing. *Scientific Reports* 5, 8481.
Voice: Isabelle – Imagine John Lennon’s Imagine when you listen to this one (and be grateful I’m not singing!)

Podcasts for science

- reach broader audiences
- article summaries
(tmel.wordpress.com)
- interview/discussion
(naturallyspeakingpodcast.wordpress.com)

Podcasts for science

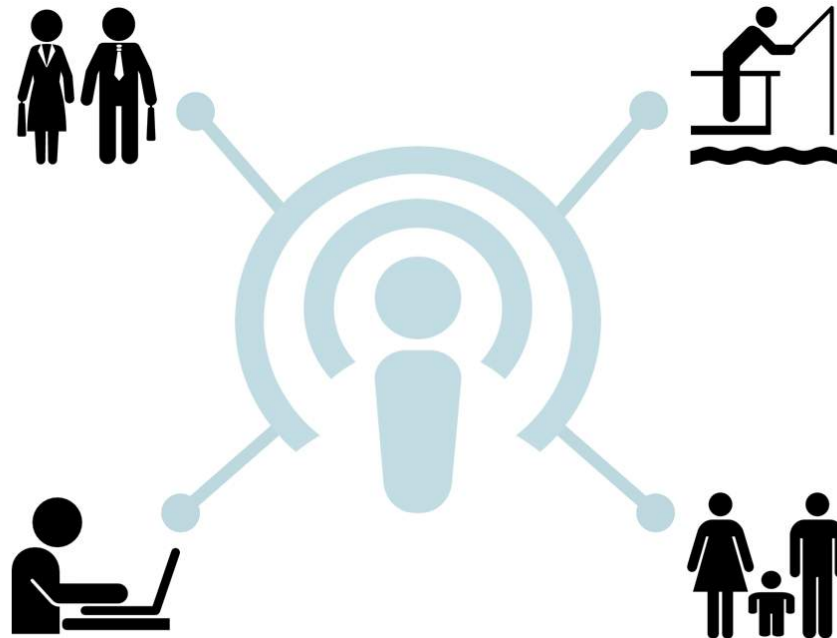
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Podcasts for science

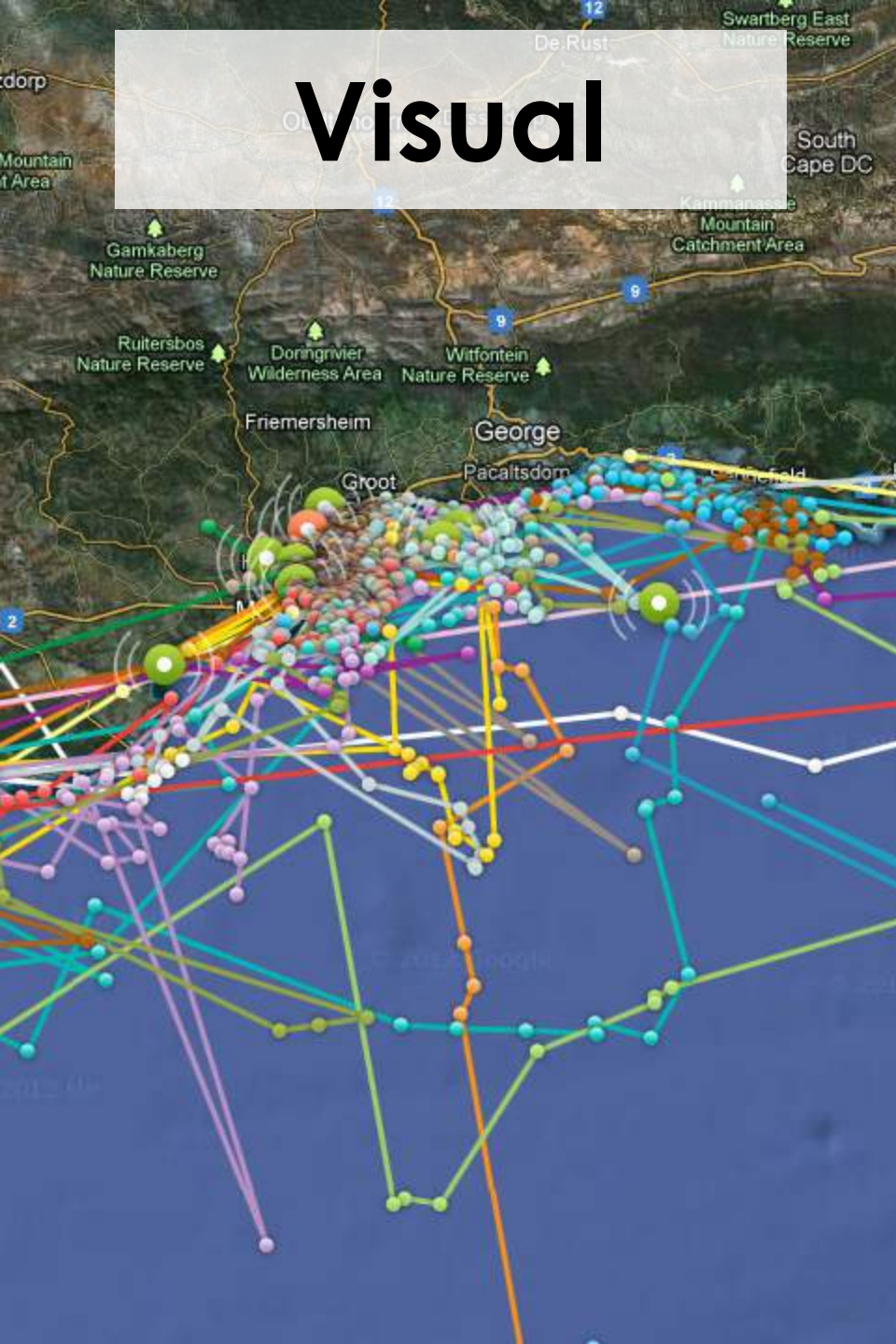
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(tmel.wordpress.com)
- interview/discussion
(naturallyspeakingpodcast.wordpress.com)
- stories
(storycollider.org)
- generates collaboration

Podcasts in a Network

- connect with network members
- create audio synthesis
- global dissemination



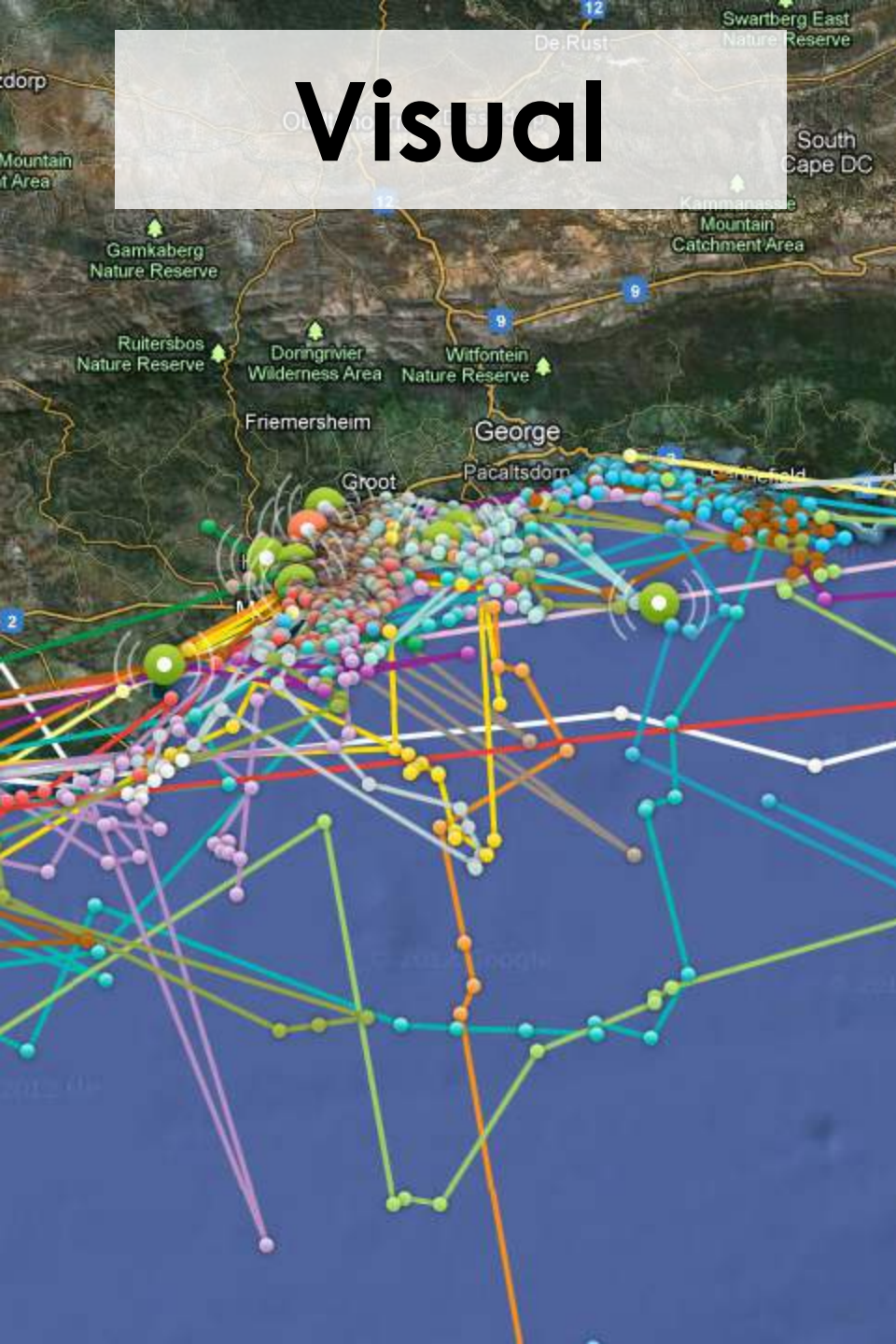
Visual



Audio



Visual



Sketching



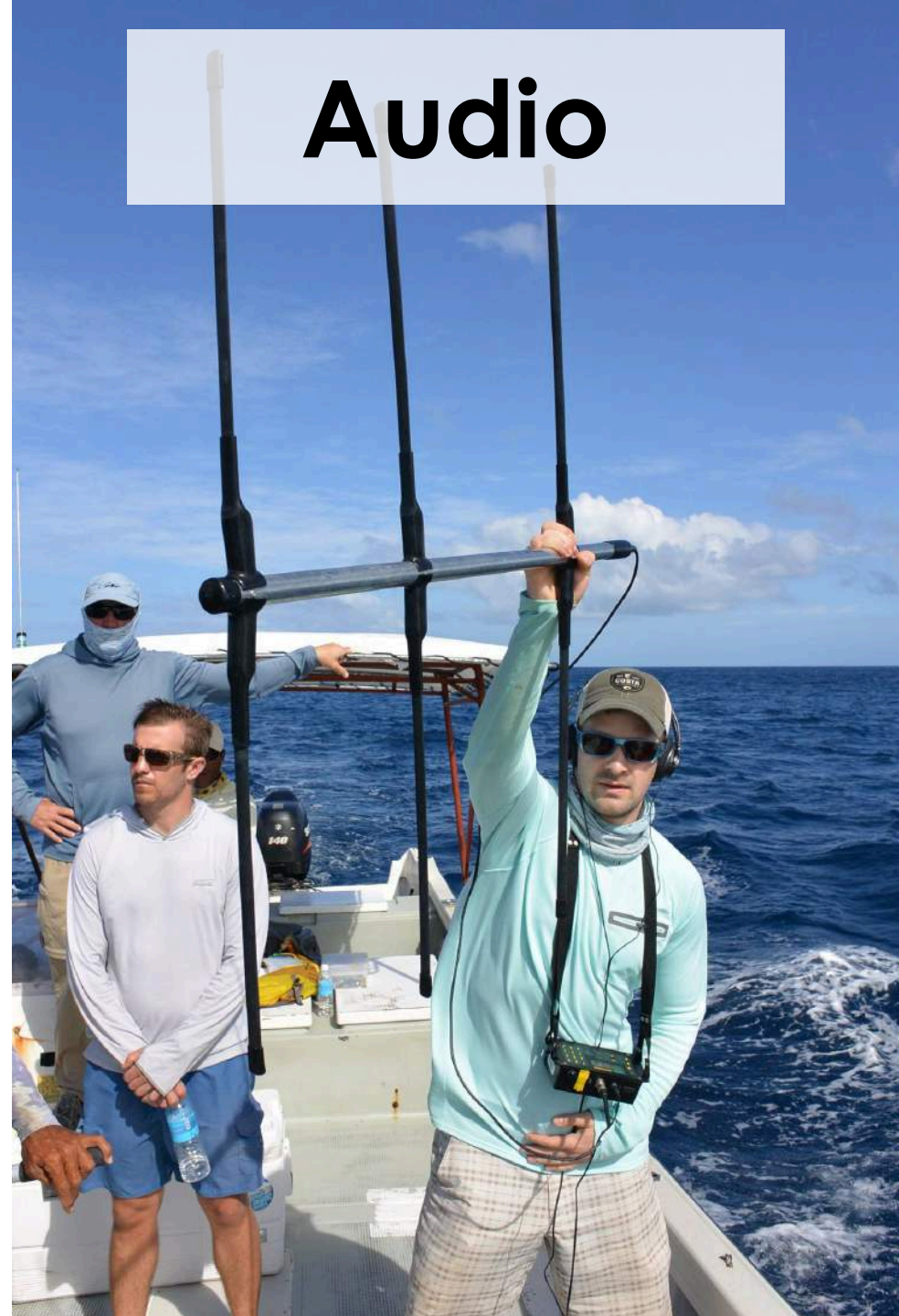
YOUR DRAWINGS
ARE AWESOME
AND YOU SHOULD
BE PROUD OF
YOURSELF.

Podcast

FREQUENCY

animal tracking
science & stories

Audio



Let's connect!



natsopinka@gmail.com



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