



Using Social Media to Monitor Wildlife

Dr Jon Chamberlain (University of Essex)

Using Social Media for Biomonitoring:
How Facebook, Twitter, Flickr and Other Social Networking Platforms
Can Provide Large-Scale Biodiversity Data.
Chamberlain, 2018.
Advances in Ecological Research Vol.59

Help! Experts

Join a wildlife recording scheme.

Connect with experts.

They confirm what's in your pics.

But also...

An observation of wildlife is created.

**Now we can find out where things live
and what they're doing.**



Help! Experts but

User must be motivated to join

- Hear about the project and find it online
- Register to the website
- Create a profile
- Learn how to input data
- Become involved in the community

User must be motivated to participate

- How much will they submit?
- Can they “lurk”?
- What makes them come back?



iNaturalist



Help! Social media

Ask your friends on social networks

Friends of friends get involved

Expert finding for specific wildlife

You know how the system works



Instagram

How it works

RECREATIONAL DIVER



FACEBOOK



Jon Chamberlain

17 hrs

Any ID for this please? Indonesia 10m down



Like · Comment · Share

👍 Rob Durrant and 11 others like this.



Ron Silver *Phyllidia varicosa*

17 hrs · Edited · Unlike · 👍 3



Michael Fineberg common name: Varicose wart slug
Both pretty, and common! 😊

10 hrs · Edited · Unlike · 👍 1



Wayan Darma *phyllidia varicosa*

9 hrs · Unlike · 👍 1

Facebook Groups

Identified 3 types of Facebook groups that might contain biodiversity information.

Task Request (TR)

Users are invited to ask for an identification of their picture
e.g., ID Please (Marine Creature Identification)

Media Gallery (MG)

User share and look at nice pictures
e.g., Underwater Macro Photographers

Knowledge Sharing (KS)

Users share knowledge or coordinate activities
e.g., National Forum for Biological Recording

Topic Specificity (-S or -G)

Dataset

Messages cached and analysed

- **39k threads**
- **14k users**
- **34 Facebook groups**
- **14k mentions of species**

Analysis

Topic-specific Task Request (TR-S) groups

High number of photo type threads (63% have images)

Likely to get a reply (71% of messages get a reply)

Have active users (36.5% of groups users participate)

Threads have species mentioned (73%)

Approximately 45% of threads could be useful

Accuracy

A sample of 61 difficult to identify images from 2 TR-S groups showed an identification accuracy of 93%

Groupsourcing: Distributed Problem Solving Using Social Networks. Chamberlain, 2014. Proc. HCOMP'14



Language processing

**Image + ID request (implied)
+ Location + Location (false)**

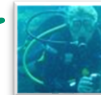


Having a great time in Bali,
look what I've seen!! ☺
Hope ur all having a gr8
time in rainy old Blighty



Common name

So jealous! What is that thing!?



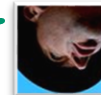
Spam

Blue Dragon sea slug – cool!!



**Scientific name +
Interactions**

Buy Raybans!! 3 for the price of 2!!

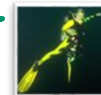


This is a *Glaucus atlanticus* nudibranch (sea slug), floats upside down on the water surface and eats jellyfish. Lovely photo!



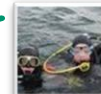
Scientific name

Yep *G atlantica* eats jellyfish so jealous

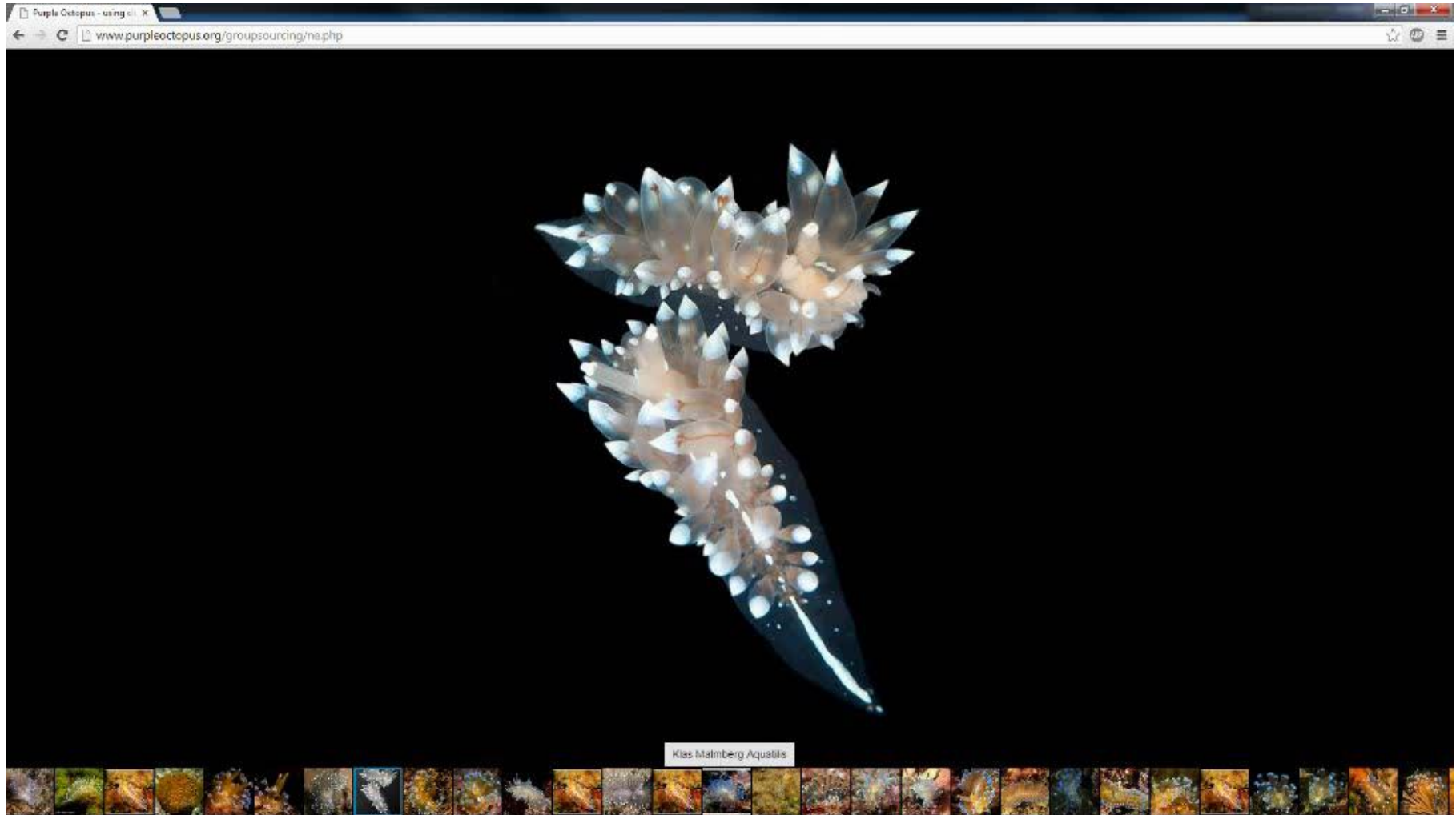


Scientific name (false)

Is this not *g pacificus*



Species morphology



Species morphology

Janolus cristatus (delle Chiaje, 1841)



Erling Svensen



Social network message thread 

 **Jon Chamberlain**
I was thinking this was *Coryphella brownii*, but someone suggested it might be *Facellina bostoniensis* due to the long tentacles and more upright rhinophores. Any thoughts?



 Like · Comment · September 2017 · 23 October at 20:39

 Reply to this

 **Jon Chamberlain** Found at site at Salthouse, Norfolk in Sept (check ref!)

 **Sam Smith** typical *F. bostoniensis*. Lamellate rhinophores not on *C. brownii*

 **Rob Spray** There are a few key features I think help spot a *Facellina* straightaway 1) pink 'glow' of the mouth within the head, 2) BIG oral processes 3) long, luxurious cerata → Then you just ID which species...

 **Becky Mullan** luxurious ... glow ... sounds like a female mull!

 **Rob Spray** Our slugs are quite hedonistic but here in the east

 Write a comment...

Social Media Processing
 Groups identified (34)
 Threads cached (39k)
 Image URL cached
 Named entity recognition
 Query expansion
 Deduplication

Jon Chamberlain I was thinking this was *Coryphella brownii*, but someone suggested it might be *Facellina bostoniensis* due to the long tentacles and more upright rhinophores. Any thoughts?

Jon Chamberlain Found at site at Salthouse, Norfolk in Sept (check ref!)

Sam Smith typical *F. bostoniensis*. Lamellate rhinophores not on *C. brownii*

Rob Spray There are a few key features I think help spot a *Facellina* straightaway 1) pink 'glow' of the mouth within the head, 2) BIG oral processes 3) long, luxurious cerata → Then you just ID which species...



Species morphology image gallery



Worldwide heatmap of species diversity

Challenges

**Bias towards charismatic species:
birds, sea slugs, dolphins, ladybirds, jellyfish, sea shells...**



Dangers

Bias of a black box system?

Abuse of data?

Consent?



Cambridge
Analytica

The Power of Big Data and Psychographics
in the Electoral Process

A close-up, underwater photograph of a diver wearing a black wetsuit and a diving mask. The diver is holding a camera and is in the process of taking a picture of a vibrant coral reef. The water is clear and blue, and the coral is diverse in color and shape. The text "More divers..." is overlaid in white, bold font in the upper right quadrant of the image.

More divers...

**...taking and sharing
more pictures**



Using Social Media to Monitor Wildlife

Dr Jon Chamberlain (University of Essex)

Using Social Media for Biomonitoring:
How Facebook, Twitter, Flickr and Other Social Networking Platforms
Can Provide Large-Scale Biodiversity Data.
Chamberlain, 2018.
Advances in Ecological Research Vol.59