

PURPLE OCTOPUS

Using Social Media to Study Wildlife

Dr Jon Chamberlain

NBN Conference 2016



**More people are
taking and sharing
more pictures online**

© NFBR/Fiona Crouch

Help! Experts

- Join a wildlife recording scheme.
- Connect with experts.
- They confirm what's in pics.

And also...

- An observation of wildlife is created.
- Now we can find out where things live and what they're doing.



Motivation

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



Help! Social media

- Ask your friends on social networks
- Friends of friends get involved
- Expert finding for specific wildlife

facebook

flickr™

twitter 



Instagram

Motivation

Social Media

- People know how the systems work
- Small effort required to learn how to post
e.g., location, hashtag
- Constant monitoring
- Many different types of project are started
by interested amateurs or specialists
- You can easily start a specific project



How it works

RECREATIONAL DIVER



How it works

RECREATIONAL DIVER



How it works

RECREATIONAL DIVER



FACEBOOK



Jon Chamberlain

17 hrs

Any ID for this please? Indonesia 10m down



Like · Comment · Share

How it works

RECREATIONAL DIVER



FACEBOOK



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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

How it works

RECREATIONAL DIVER



8 mins

FACEBOOK



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17 hrs

Any ID for this please? Indonesia 10m down



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Monitoring wildlife

Can we monitor wildlife using these images?

- How much data is there?
- How good are people at identifying wildlife on social media?
- Can this data be automatically processed?
- What can we do with the data?
- How would this data fit within the NBN data flow?

How much data?

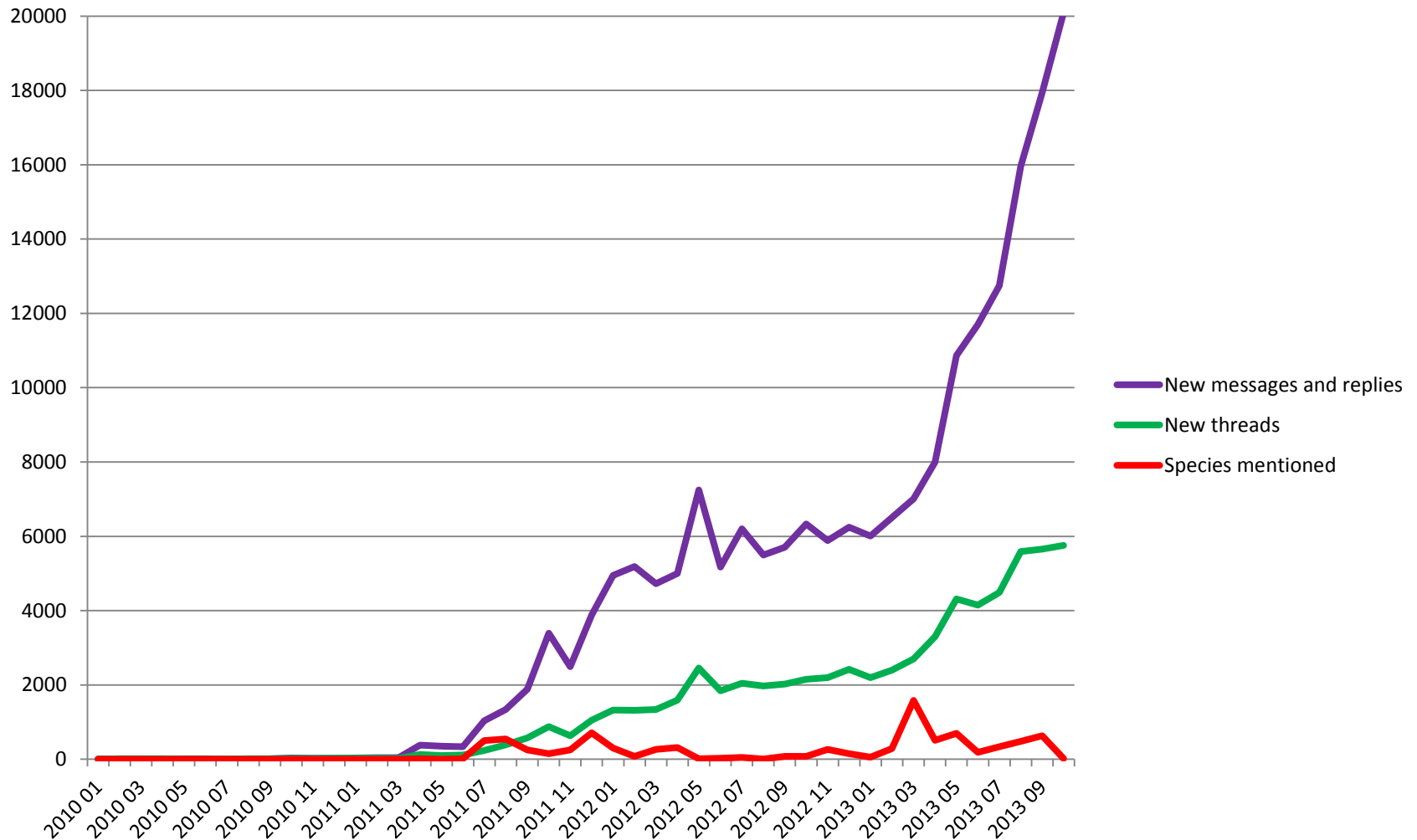
350 million images uploaded to Facebook each day.

Some are pictures of wildlife.

Pictures and video also posted on Flickr, Instagram, Twitter, YouTube, Vimeo...

Uploaded by divers, aquarists, researchers, shell collectors, beachcombers, dog walkers...

Data added per month



Accuracy

A sample of images from 2 Facebook groups showed an identification accuracy of 93%

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



Language Processing



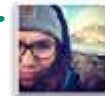
Having a great time in Bali,
look what I've seen!! ☺
Hope ur all having a gr8
time in rainy old Blighty



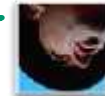
So jealous! What is that thing!?



Blue Dragon sea slug – cool!!



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



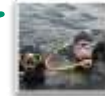
This is a Glaucus atlanticus nudibranch (sea
slug), floats upside down on the water
surface and eats jellyfish. Lovely photo!



Yep G atlantica eats jellyfish so jealous



Is this not g pacificus



Language Processing

**Image + 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**



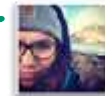
Common name

So jealous! What is that thing!?

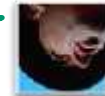


Spam

Blue Dragon sea slug – cool!!



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



**Scientific name +
Interactions**

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



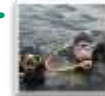
Scientific name

Yep **G atlantica** eats jellyfish so jealous



Scientific name (false)

Is this not **g pacificus**



Language Processing

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

Jon Chamberlain Found at 8m at Salthouse, Norfolk in Sept (chalk reef).

Ian Smith typical *F. bostoniensis*. Lamellate rhinophores not on *C. browni*

Rob Spray There are a few key features I think help spot a *Facelina* 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 Hitchin luxurious ... glow ... sounds like a female nudi!]

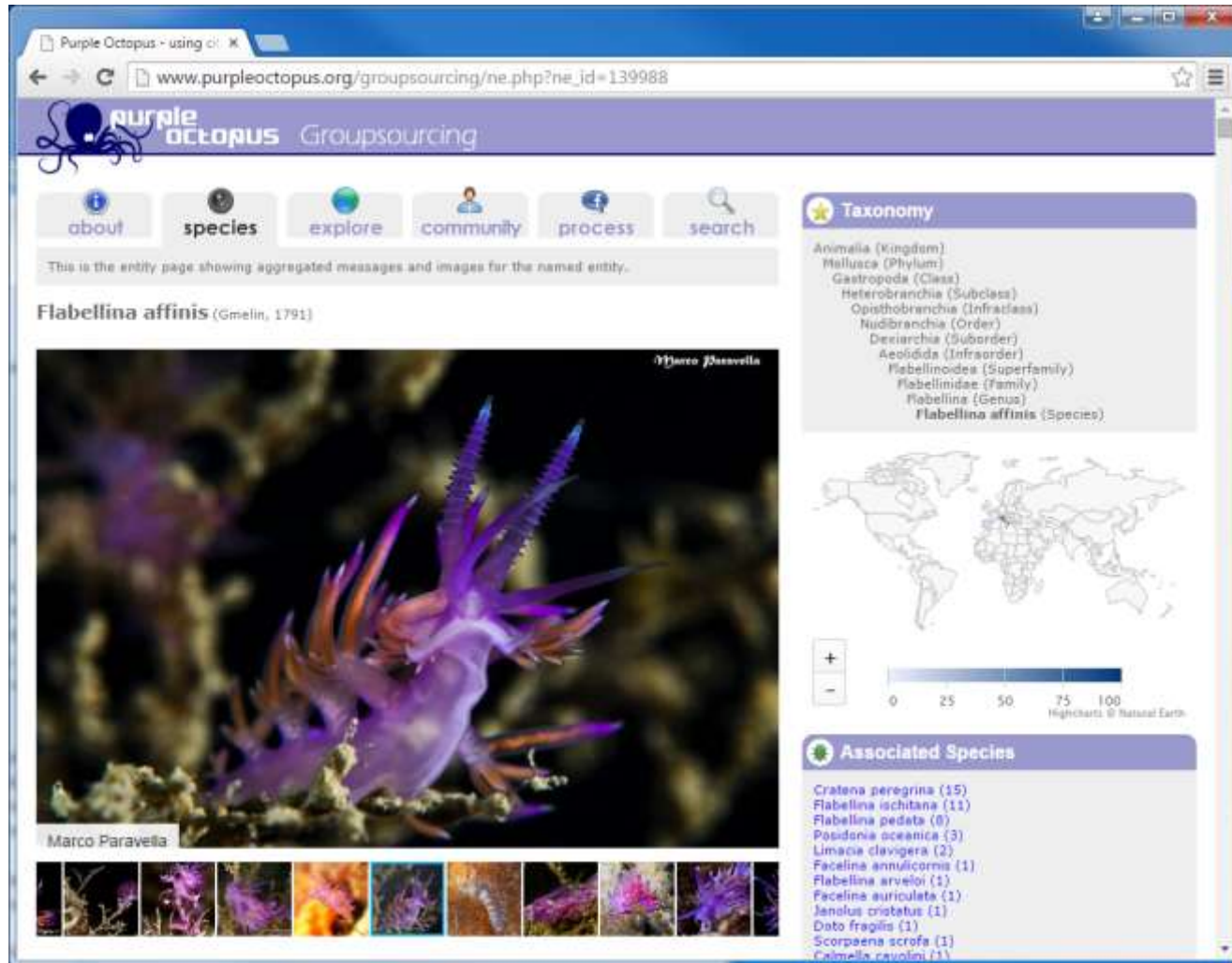
Rob Spray Our slugs are quite hedonistic out here in the east :-)



Sentiment analysis and entity recognition is challenging

Species names can be extracted by simple string matching from a taxonomy (such as WoRMS)

Prototype website



Species Morphology

Janolus cristatus (delle Chiaje, 1841)



Erling Svensen



Social data in NBN

Minimum Viable Data for an observation?

- Species name
- Timestamp (of the observation, not the post)
- Location (country, site name)
- Recorder (the person who posted the observation)
- Determiner (who confirmed the record within the post)

Additional data?

- Media (image/video)
- Full text extracted
- Precise location
- Who made the observation
- Third-party confirmation

Challenges

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



Dangers

Targeting rare species

**Some Facebook groups discourage
location information in posts**



Social data in NBN

How does it fit with NBN Strategic Aims?

1A: Increase the capture of high quality biological data

1B: Diversify the data in NBN

1C: Ensure rapid data flow

1D: Support those doing biological recording (even if they don't know it!)

1E: Grow the number of people involved in biological recording

Social data in NBN

How does it fit with NBN Strategic Aim?

3A: Engage the public in biological recording

3B: Promote the value of biological data

3C: Principle provider of social media observations of biological data

What next?

- Update Purple Octopus website to allow community control and increase data (2017)
- Research with University of Essex to process the language of the posts (2016-19)
- Working with NBN to make the data accessible (2017)

Would you like to collaborate or use this kind of data?

Get in contact! jchamb@essex.ac.uk



- High-quality biodiversity data is being shared on social media
- Users get accurate information about what they have seen
- Scientists can use this information to monitor wildlife
- Significant challenges to be overcome

Prototype and more info: <http://www.purpleoctopus.org>