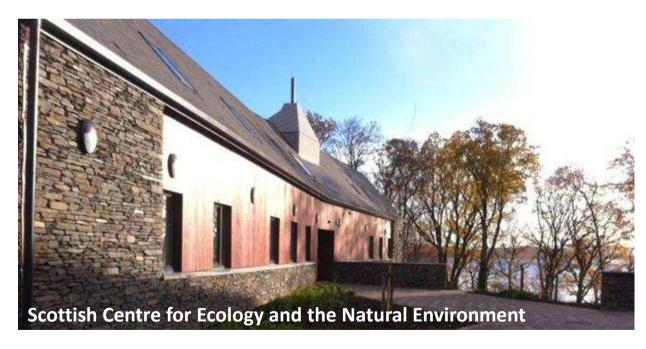
Spring back to Rowardennan..!







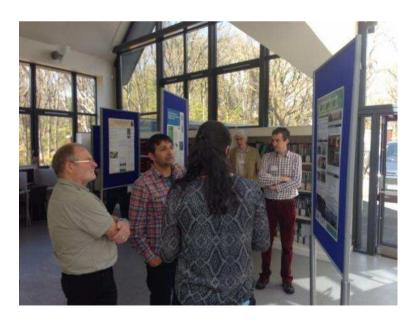
Thurs 21st – Fri 22nd April, 2 day meeting

- Hosted by SCENE involved local & SFG support
 - Stunning backdrop & sun shone
 - Excellent on-site facilities & event ran smoothly
 - Array of delicious catering & all courtesy of Rona Brennan
 - 45 delegates & broad range of affiliations attended



Day 1 – traditional SFG meeting format

- Dual theme LLTNP focus & wider freshwater perspective
- 15 SFG speakers & several SFG members chairing & 10 posters
- Mix of 20 min talks & 5 min speed presentations
- Buffet style lunch, poster session & tour of facilities



Day 1 – discussions continued into the wee hours

- Social dinner & extended interaction great atmosphere
- Two entertaining evening speakers P. Maitland & D. McCafferty
- Explosion of SFG tweets throughout & following event brilliant!
- Lots of positive feedback received thank you!



Day 2 – Bio-blitz activity

- New way for SFG members to get together
- Fantastic uptake with >75% of meeting delegates participating
- Clear willingness to get involved and interact with each other
- Four parallel Bio-blitz groups
 - 1 − 2 leaders with overall responsibility
 - 7 9 SFG members per group
 - Broad mix of expertise & experience



Day 2 - Bio-blitz activity cont'd

- LLNTP-based field exercise & lab work
- Buffet style lunch in between
- Exchanging knowledge & skills
- Populate iRecord with our findings
- Interpret data & collate evidence







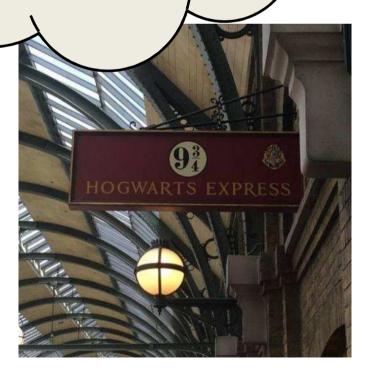




Summer Holiday 2016
The Wizarding World of Harry Potter
Universal Orlando

Sharing SFG Bio-blitz Feedback

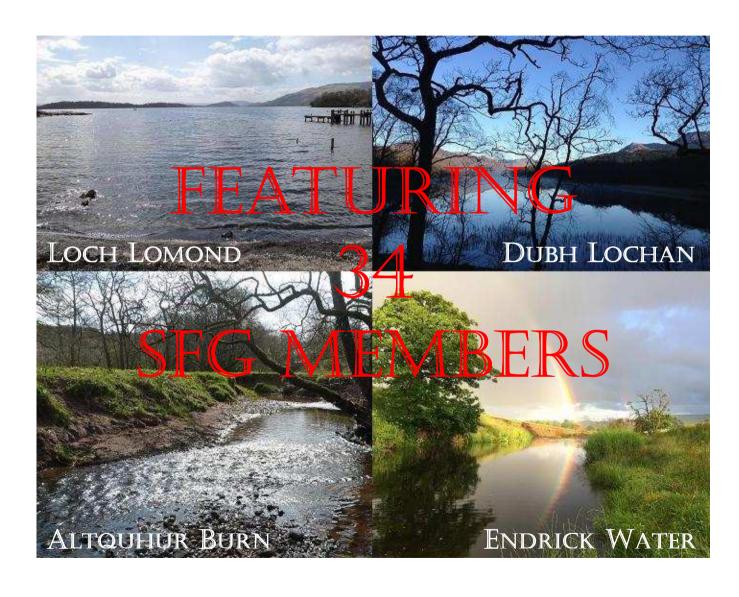
- What we did & found out?
- Why it mattered so much?



SFG MEMBERS AND THE WATERY HALLOWS, PARTS 1 – 2



TALE OF THE FOUR BIO-BLITZES



OUR QUEST

Work together & Share Expertise To

- 1. CONTRIBUTE TO LOCAL (LLTNP)
 FRESHWATER BIODIVERSITY RECORDING
 - COMMUNITY COMPOSITION
 - Semi-Quantitative Approach (DAFOR Scale)

- 2. FIND HORCRUXES SPECIES OF INTEREST
 - Possible To Re-find..?



Arcteonais Iomondii
LOMOND WORM

RARE
INVERTEBRATE
SPECIES DISCOVERED
BY P. MAITLAND

Bathynella natans Subterranean Crustacean SCARCE-WHIRLIGIC

BEETLE SPECIES

DOCUMENTED BY

G. FOSTER

Gyrinus aeratus

AQUATIC WHIRLIGIG BEETLE

COLIN BEAN'S EXCUSE TO GO FISHING!

Salmo salar Atlantic Salmon Smolts

THE CURIOUS CHILDREN

1. ALGAE

- BENTHIC DIATOMS
- LITTORAL DESMIDS
- PHYTOPLANKTON

2. INVERTEBRATES

- ZOOPLANKTON
- Macro-invertebrates & Beetles

3. AQUATIC MACROPHYTES

• EMERGENT, FLOATING & SUBMERGED LIFE FORMS

4. FISH

• Origin & Life Histories



THE TRIWIZARD QUAD BIO-BLITZ TOURNAMENT



Phil Taylor @ScienceAnd... 05/05/2016 @ProfColinBean @ChrisCathrine @bugsymac1 @Scottish_FwGrp @AlanLaw_ I had no idea bioblitzing was so competitive. We need team names.









ORDER OF THE N TAXA



PAULINE LANG AND THE TOOTHBRUSH OF SECRETS



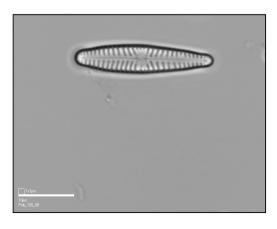
@LacLaurence @AlanLaw_
@Scottish_FwGrp
@ScienceAndMaps And benthic
diatoms: how much hidden
diversity will be revealed by a
toothbrush?!

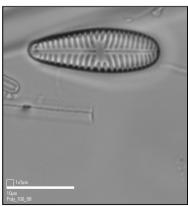




BENTHIC DIATOMS

- ASSEMBLAGES
 - Some Commonly shared Spp.
 - Altquhur Burn, Endrick Water & L. Lomond Similar
 - A CHNANTHIDIUM MINUTISSIMUM TYPE
 - Gomphonema Calcifugum & G. Olivaceum/ G. Olivaceoides complex
 - Differences in Abundance and Spp. Tail Between Sites
 - Dubh Lochan Distinct Flora though L. Lomond Overlap
 - Peronia fibula, Brachysira spp. & Eunotia spp.

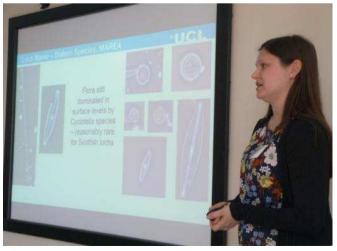




BENTHIC DIATOMS CONT'D

- Preliminary conclusions
 - GENERALLY GOOD QUALITY CONDITIONS
 - NUTRIENT INFLUENCE E.G. ENDRICK WATER
 - LOCH LOMOND IS THE RECEIVING WATERBODY
 - DUBH LOCHAN IS DYSTROPHIC
 - Useful Training & Inter-Analyst QC exercise





CEH AND THE GOBLET OF LIFE



HWoods @Helwoods 28/04/2016 Sneak peak of @Scottish_FwGrp Loch Lomond @BioBlitzUK phytoplankton,full results soon @iRecordWildlife #AwesomeAlgae



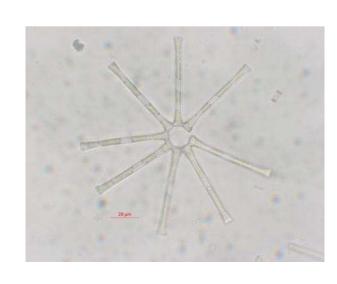


PHYTOPLANKTON

• LOCH LOMOND COMMUNITY

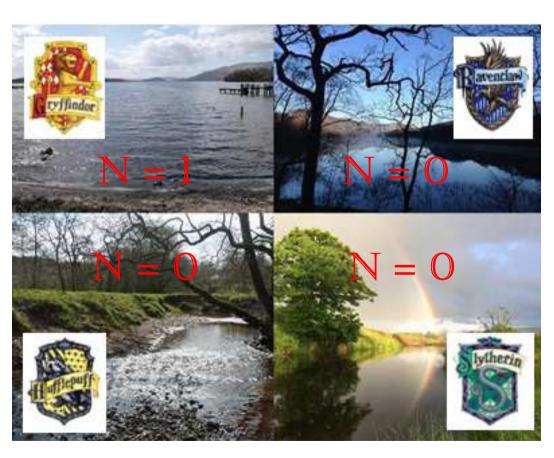
- Observed Typical Spring Phytoplankton Bloom
- Dominated by Planktic Diatoms
 - ASTERIONELLA FORMOSA, TABELLARIA FLOCCULOSA VAR. ASTERIONELLOIDES & FRAGILARIA CROTONENSIS
- Some Cyanobacteria Colonies
 - Woronichinia Naegliana
- Sprinkling of Desmids
 - Xanthidium antilopaem var. Hebridarum & Staurodesmus megacanthus var. Scotius

- GENERALLY GOOD QUALITY CONDITIONS
- SLIGHTLY NUTRIENT ENRICHED



LAURENCE CARVALHO AND THE PHYCOLOGISTS MOSS





LITTORAL DESMIDS...

LITTORAL DESMIDS

• LOCH LOMOND SHORELINE

- SPHAGNUM MOSS SQUEEZINGS
- COLONISED BY SINGLE DESMID SPECIES
 - Netrium Digitus

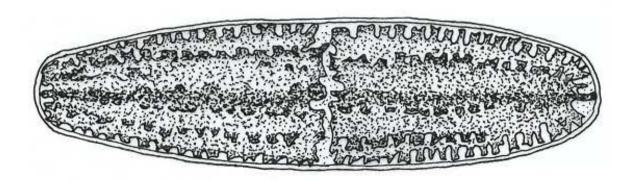


- CHANCE PLANKTER OF LAKE MARGINS
- Prefers PH < 7 & Low Nutrient Conditions



Pauline Lang @Dr_LangP 29/04/2016 Netrium digitus: desmid collected from moss squeezings @Scottish_FwGrp Lomond #Bioblitz @LacLaurence @Helwoods





NETRIUM LINE DRAWING COURTESY OF U.K. DESMID EXPERT - DR DAVID WILLIAMSON

MACROPHYTES THROUGH THE AGES





DUBH LOCHAN

• SPECIES COMPOSITION

- 8 x Fringing Emergents
 - Mostly Mixed Reed, Rush, Sedge & Horsetail
- 2 x Floating Water Lilies
 - Nuphar Lutea & Nymphaea Alba
- 4 X Submerged* Plants
 - E.G. Lobelia dortmanna, Littorella uniflora

- MINIMAL WIND/WAVE DISTURBANCE
- DEPTH & LIGHT IMPORTANT DRIVERS
- FLORA REFLECTS OLIGOTROPHIC CONDITIONS
- STABLE CLIMAX COMMUNITY
- NATIONALLY SCARCE *ELATINE HEXANDRA*





LOCH LOMOND

• Species Composition

- 1 x Fringing Emergent
 - Juncus Bulbosus
- 9 x Submerged* Plants
 - Littorella uniflora, Lobelia dortmanna, Myriophyllum alterniflorum, Isoetes lacustris, Ranunculus, Fontinalis antipyretica & Nitella Spp.
 - ELODEA NUTTALLII

- WIND/WAVE DISTURBANCE HIGHLY INFLUENTIAL
- Depth, Light & Substrate Also Important
- Generally Good Water Quality
- Invasive Pondweed Threat

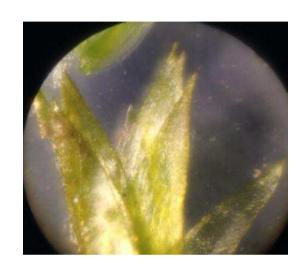




ALTQUHUR BURN

• SPECIES COMPOSITION

- 2 x Submerged* Plants
 - CALLITRICHE HAMULATA
 - FONTINALIS ANTIPYRETICA



- Shallow Stream With Varied Flow Pattern
- Cobbles, Gravel & Fine Sediment
- STABLE SUBSTRATA & TREE ROOTS
 SUPPORTED WATER MOSS GROWTH
- STARWORT FOUND IN LOCALISED PATCHES



IAIN GUNN IS THE ZOO-PLANKTON PRINCE





DUBH LOCHAN

• Species Composition

- 6 x Crustacean Zooplankton Spp. Present
 - MOST ABUNDANT WAS FILTER-FEEDING CALANOID COPEDOD, EUDIAPTOMUS GRACILIS
- Distinctive Cladoceran Found Amongst Spp. Assemblage
 - Holopedium Gibberum

- Characteristic of Oligotrophic Standing Waters
- SPP. RECORDED PREVIOUSLY IN DUBH LOCHAN & LOCH LOMOND

FANTASTIC MINI-BEASTS AND WHERE TO FIND THEM





Macro-Invertebrates

• ALTQUHUR BURN

- 30 x Insects
 - 9 Spp. Ephemeroptera & 9 Spp. Trichoptera
 - 7 Spp. Plecoptera & 3 Spp, Coleoptera
 - 1 Sp. Megaloptera & 1 Sp. Diptera
- 1 x Crustacean
 - GAMMARUS PULEX
- 12 x Cranefly Spp.
 - STREAM MARGIN SURVEY (G. HANCOCK, PERS. COMM.)

• Preliminary conclusions

Generally Good Water Quality
 & Habitat Conditions Indicated





MACRO-INVERTEBRATES

• DUBH LOCHAN

- 28 x Insects
 - 6 Spp. Hemiptera & 6 Spp, Coleoptera
 - 6 Spp. Trichoptera & 2 Spp, Ephemeroptera
 - 4 Spp. Odonata, 3 Spp. Diptera & 1 Sp. Megaloptera
- 2 x Crustacean Spp.
 - Asellus aquaticus & Crangonyx pseudogracilis
- 2 x Molluscs, 2 x Annelids & 1 x Acari

- NORTHERN RIVER CRANGONYCTID, NON-NATIVE SHRIMP SPECIES PRESENT
- ECOLOGICAL IMPACT CONSIDERED MINOR





Macro-Invertebrates

• LOCH LOMOND

- 12 X INSECTS
 - 4 Spp. Trichoptera & 2 Spp, Ephemeroptera
 - 3 Spp. Diptera Spp., 2 Spp, Coleoptera & 1 Spp. Hemiptera
- 2 x Crustacean Spp.
 - Asellus aquaticus & Crangonyx pseudogracilis
- 3 x Molluscs, 2 x Flatworms, 1 x Roundworm, 1 x Annelid & 1 x Acari

- NORTHERN RIVER CRANGONYCTID, NON-NATIVE SHRIMP SPECIES PRESENT
- ECOLOGICAL IMPACT CONSIDERED MINOR



BEETLE THE BARD



@ChrisCathrine
@ScienceAndMaps
@ProfColinBean @bugsymac1
@Scottish_FwGrp we also found out target species, Gyrinus aeratus, double points!



SEVERAL ADULT
WHIRLIGIG BEETLE
SPECIMENS COLLECTED...

THE WAND CHOOSES THE WIZARD

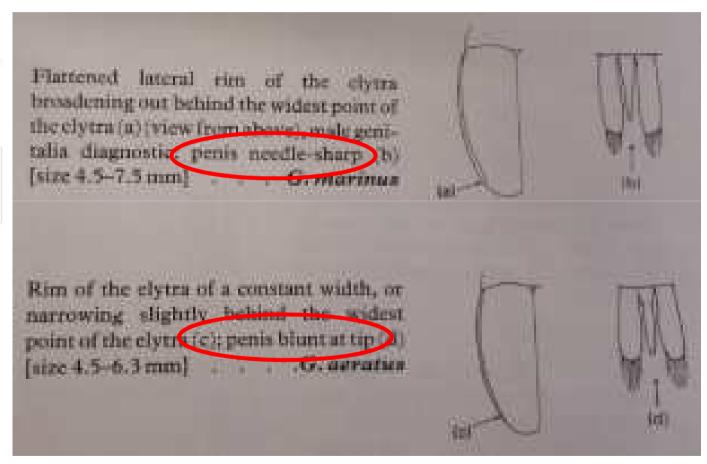


Capturing an intimate moment with water beetles during yesterday's Bioblitz #WhichOnelsIt

@ScienceAndMaps @AlanLaw







GYRINUS AERATUS - ID CONFIRMED BY INSPECTION OF MALE GENITALIA

Professor Bean And The Ichthyologists Of Fishkaban





ENDRICK WATER

• FISH ASSEMBLAGE

- 6 x Spp.
 - Brook Lamprey (Lampetra Planeri)
 - European Minnow (Phoxinus Phoxinus)
 - Three-Spined Stickleback (Gasterosteus aculeatus)
 - Brown Trout (SALMO TRUTTA)
 - European Eel (Anguilla anguilla)
 - Dace (Leuciscus Leuciscus)







- Although Not Found on This Occasion, Atlantic Salmon (Salmo Salar) Smolts Are Monitored At This Site By LLFT (March-August) using Rotary Screw-Trap Method
- Generally Well Known Invasive Spp. Hotspot (Pers. Obs. C. Bean)

ALTQUHUR BURN

• FISH ASSEMBLAGE

- 3 x Spp.
 - Brook Lamprey (Lampetra Planeri)
 - ATLANTIC SALMON (SALMO SALAR)
 - European Minnow (Phoxinus Phoxinus)

- Relatively Natural Watercourse
- DECENT HABITAT QUALITY
- Surrounding Agricultural Land Use
- Some Changes to Physical Character (P. Maitland, Pers. Obs.)





THE QUIDDICH BIO-BLITZ "GOLDEN SNITCH"



KEY OUTCOMES

- We had so much fun it was "Riddikulus"
- REAL BUZZ OF CHATTER & INTERACTION
- DIVERSITY OF TALENT & INTEREST
- TEAM FRESHWATER FOCUS
- GETTING TO KNOW EACH OTHER BETTER
- Building SFG Bonds For The Future

"WE NEED TO WORK TOGETHER & SHARE EXPERTISE, TO BUILD A MORE COMPLETE PICTURE OF SCOTLAND'S FRESHWATER ENVIRONMENT"

- Pauline Lang, Scottish Freshwater Group



SFG COMBINED EFFORT

SCENE – Colin Adams, Rona Brennan, Hannele Honkanen, Jessica Fordyce, Davey Fettes, Stuart Wilson & Jennifer Dodd

SFGSPr16 CO-ORDINATION –LAURENCE CARVALHO, COLIN ADAMS, RONA BRENNAN, JESSICA FORDYCE, HANNELE HONKAKEN & MYSELF

BIO-BLITZERS – LAURENCE CARVALHO, COLIN ADAMS,
PETER MAITLAND, JENNIFER DODD, CRAIG MACADAM, IAIN GUNN,
ALAN LAW, COLIN BEAN, JESSICA FORDYCE, HANNELE HONKANEN,
LUCIA LENCIONI, ALEX LYLE, GARTH FOSTER, IAIN SIME,
HELEN WOODS, PHILIP TAYLOR, ALANNA MOORE,
JESSICA RICHARDSON, STEPHEN IVES, CHARLIE PERFECT, ANNA DOESER,
ALEX SEENEY, TOM LEATHERLAND, CAMERON EASTON, JANEY KEAY,
NICK BENGE, STEVE COATES, KATHRYN ELMER, CALUM CAMPBELL,
MADELEINE CARRUTHERS, ARNE JACOBS, HANS RECKNAGEL,
GEOFF HANCOCK & MYSELF

SFG OUTPUT

- JOINT PAPER DRAFTED
- All 34 Bio-blitz Participants are Co-authors
- For Publication in *The Glasgow Naturalist*

Developing an integrated forum of environmental stakeholders – a collaborative output from the first 'Bio-blitz' activity undertaken by Scottish Freshwater Group members

Pauline Lang^{1,3}, Laurence Carvalho², Colin E. Adams³, Peter Maitland³, Jennifer A. Dodd³, Craig Macadam⁴, Iain Gunn², Alan Law⁵, Colin Bean^{3,6}, Jessica Fordyce³, Hannele Honkanen³, Lucia Lencioni⁷, Alex Lyle⁸, Garth Foster⁹, Iain Sime⁶, Helen Woods², Philip Taylor², Alanna Moore², Jessica Richardson², Stephen Ives², Charlie Perfect^{5,10}, Anna Doeser⁵, Alex Seeney⁵, Tom Leatherland¹¹, Cameron Easton³, Janey Keay¹², Nick Benge¹³, Steve Coates¹⁴, Kathryn Elmer³, Calum Campbell³, Madeleine Carruthers³, Arne Jacobs³, Hans Recknagel³ & Geoff Hancock¹⁵

MISCHIEF MANAGED!

