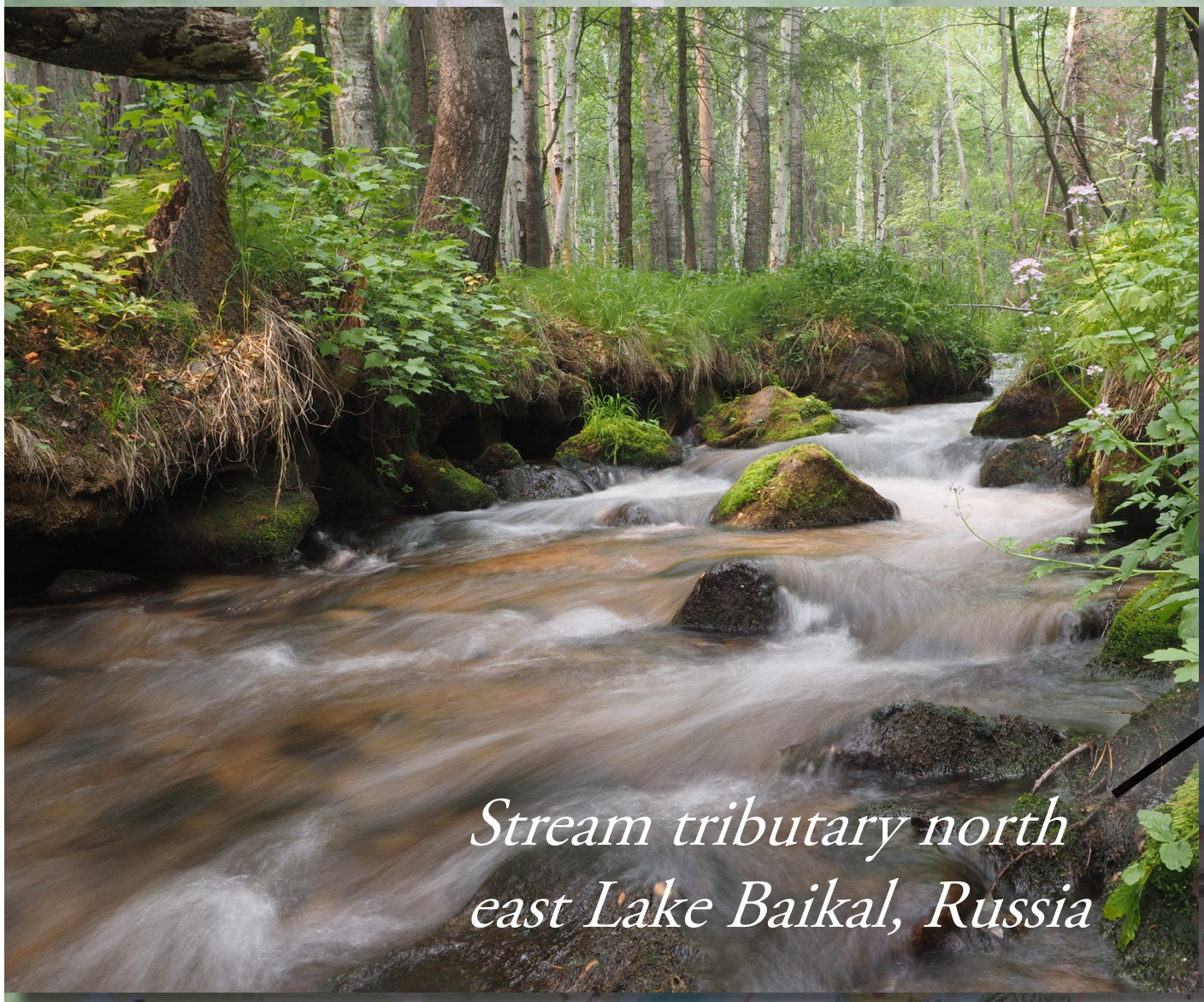
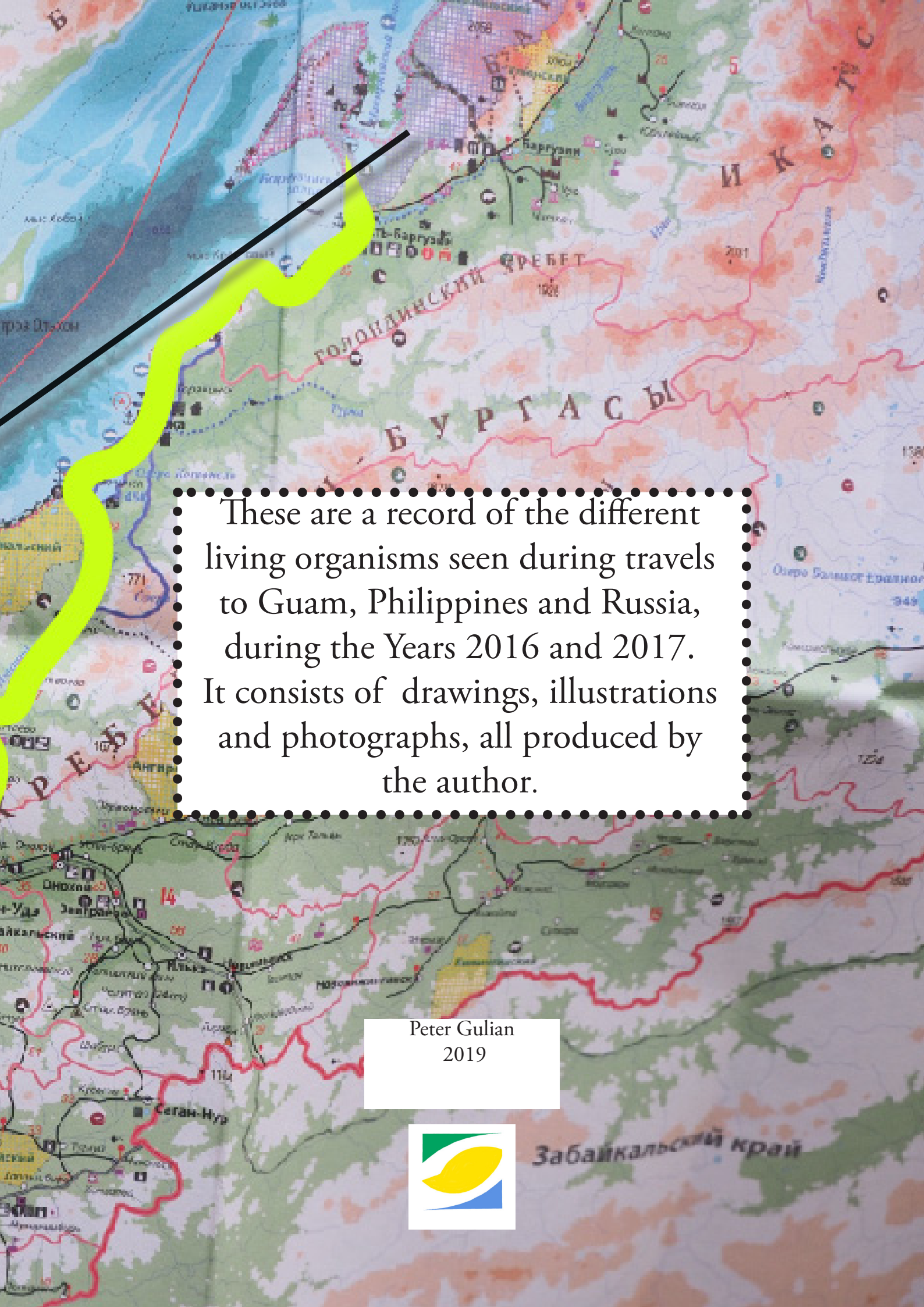
Some notes on life in Guam Philippines Russia

2020

Some life in Guam, Philippines and Russia



Stream tributary north east Lake Baikal, Russia



These are a record of the different living organisms seen during travels to Guam, Philippines and Russia, during the Years 2016 and 2017. It consists of drawings, illustrations and photographs, all produced by the author.

Peter Gulian
2019


Guam

contents

VEINS OF LIFE


CONIFERS
TUNICATES
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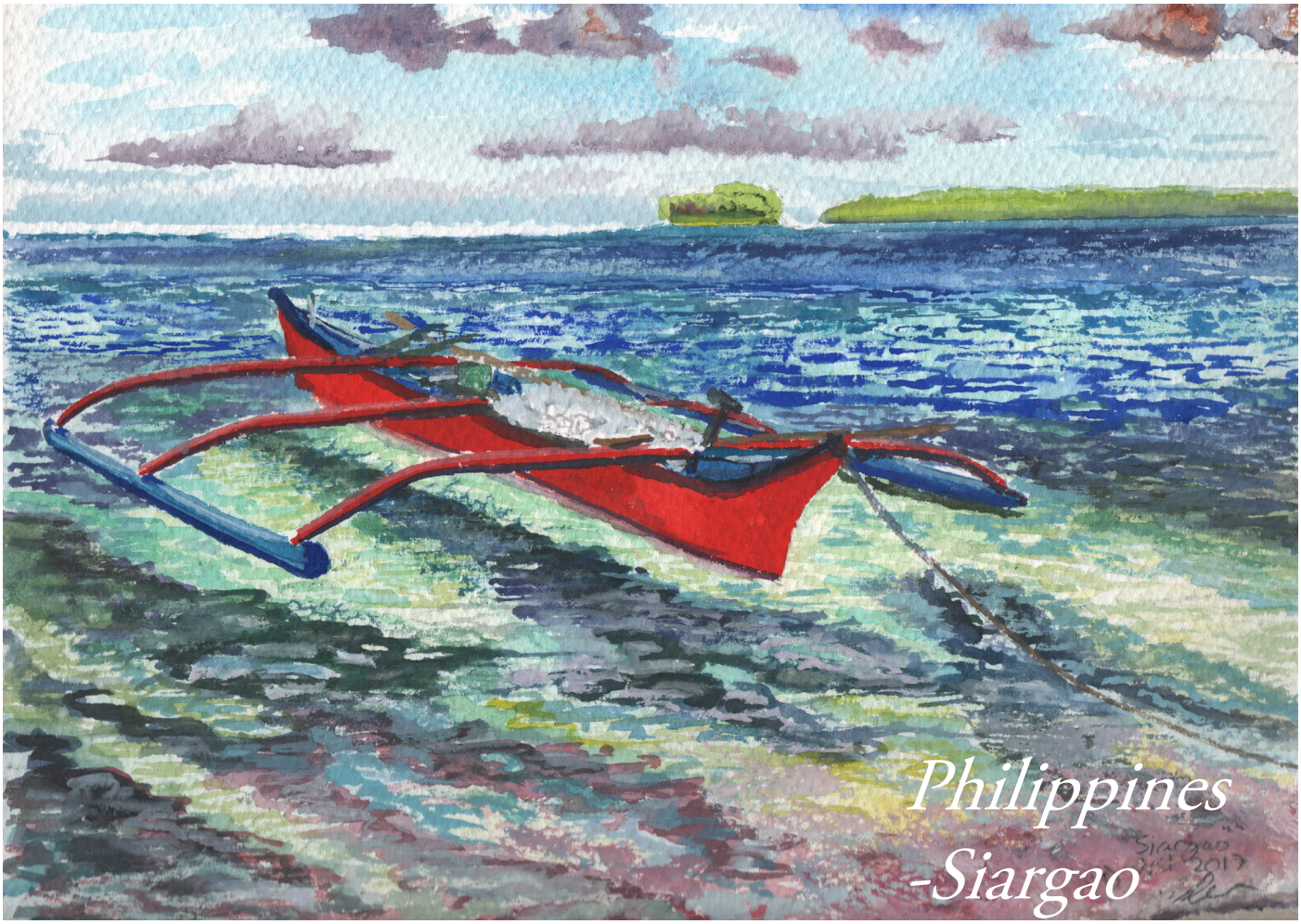
CRUSTACEA
MOLLUSCS


Philippines
-Siargao


Philippines -
Siargao

b. PROTOCTISTA

b. PROTOCTISTA 'original'

PROTISTA – 'original'

1. **MASTIGOPHORA** Flagellates
2. **SARCODINA** Pseudopodia
3. **CILIOPHORA, CILIATA**
4. **GYMNOMYCOTA** Fungal 'naked
5. **SPOROZOA** Produce spores, parasites
6. **PHYCOPHYTA** Photosynthetic

Philippines - Surigao

6 PHYCOPHYTA

i) Euglenophyta motile, 1 short + 1 long flagella- green

ii) Pyrrophyceae , one large nucleus, two unequal flagella, naked or enclosed in cellulose plates, Dino

Dinophyta

iii) Chrysophyta Golden-yellow

Diatoms red brown Bacillariophyta

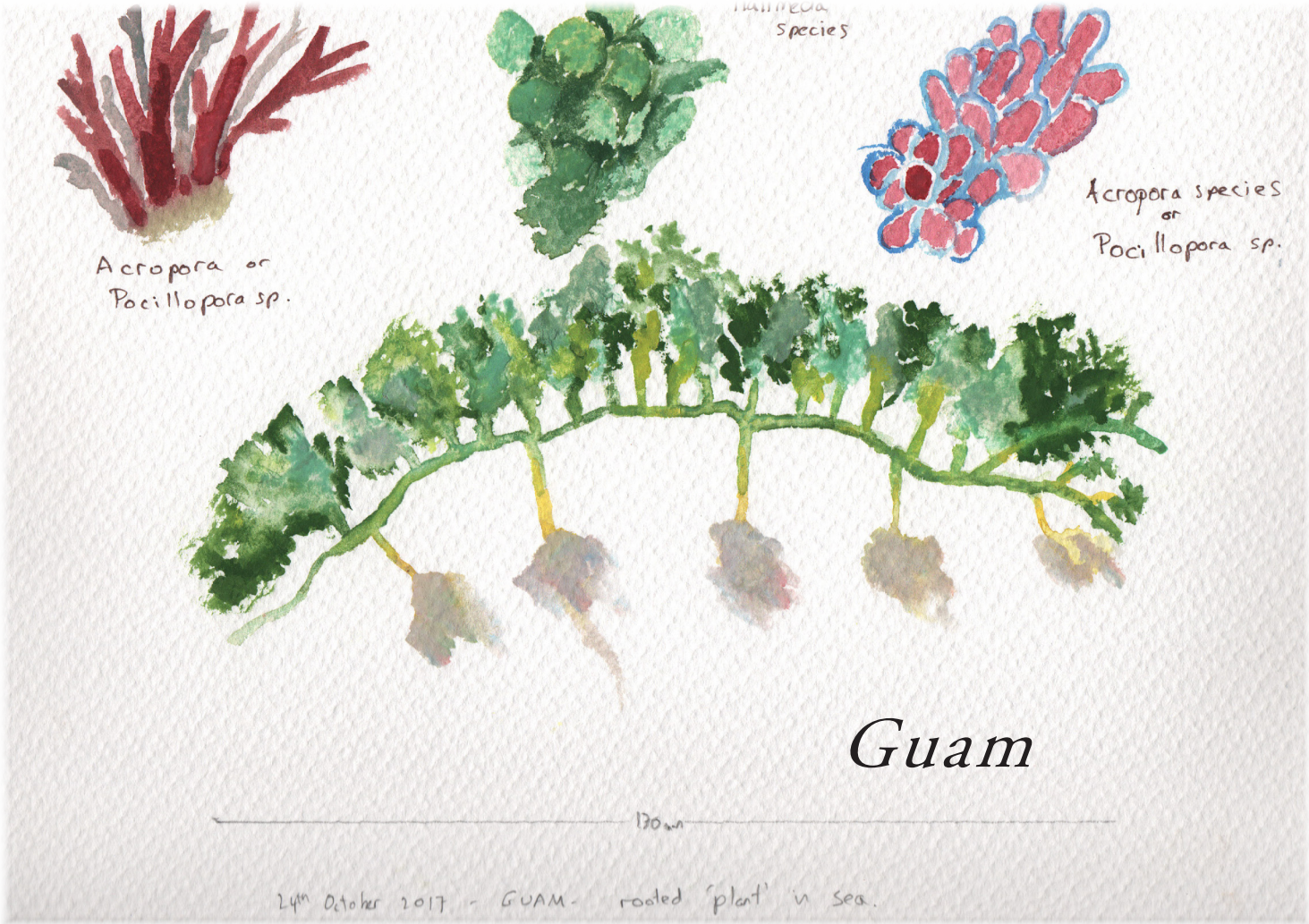
iv) Xanthophyta yellow/green

v) Chlorophyta Green-chlorophyll

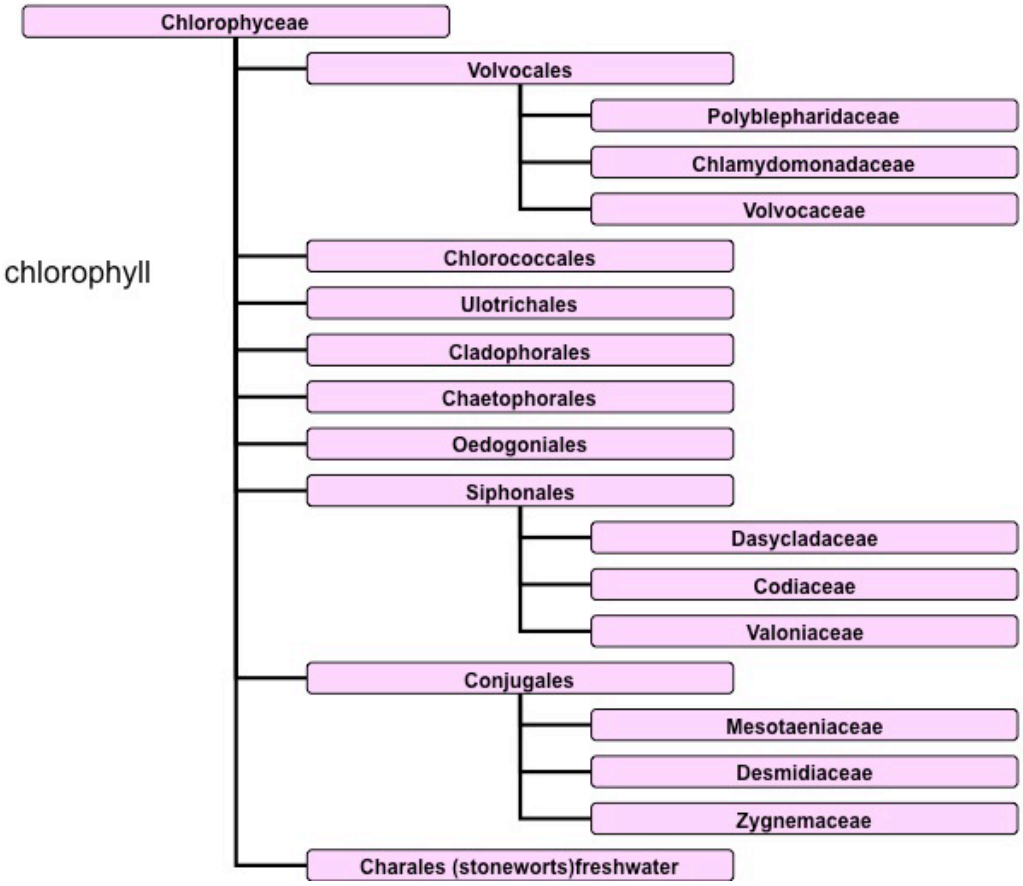
vi) Phaeophyta Brown-fucoxanthin. No single cell form

vii) Rhodophyta Red

xi) Cryptophyta - 2 equal flagella



v) CHLOROPHYTA

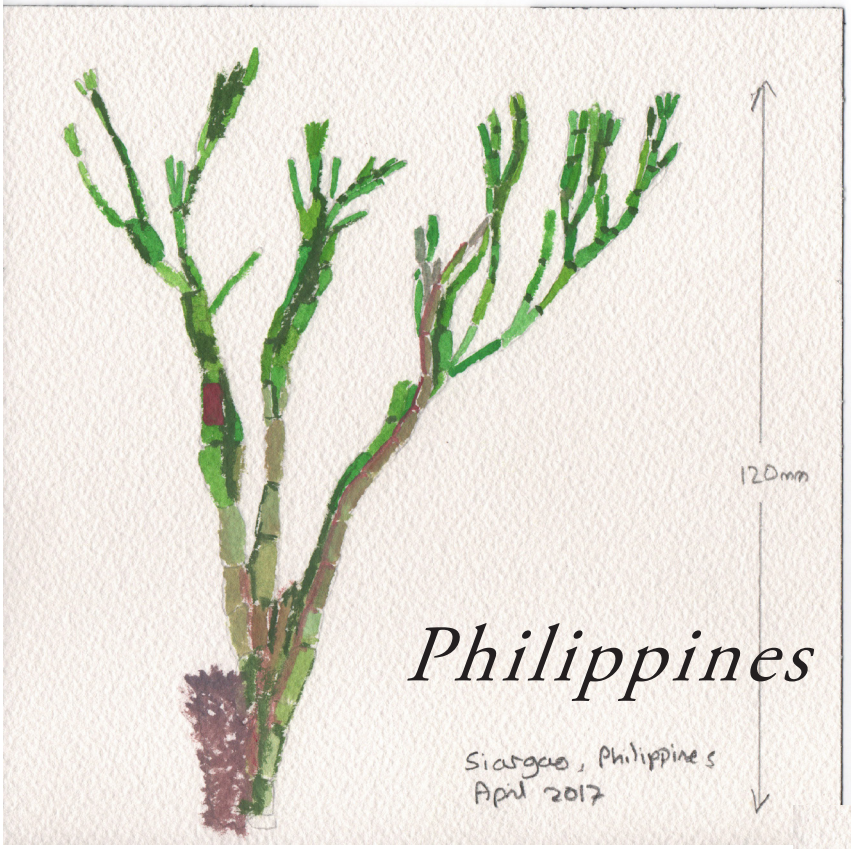


mostly freshwater, cell walls cellulose, some in lichen, zoospores pear shapped

order ulotrichales - filamentous
order chlorococcales (protococcales) - vegetative cells no flagella, no motility, aggregate, freshwater plankton, symbiosis with lichen eg chlorella, scenedesmus
order volvocaceae - colonial forms united by mucilage - eg Gonium, Volvox (almost multicellular, some division of labour !), only freshwater, Chlamydomonas, 2, 4, 8 equal length flagella, radial symmetry, Dunalella (red in brine), Haematococcus

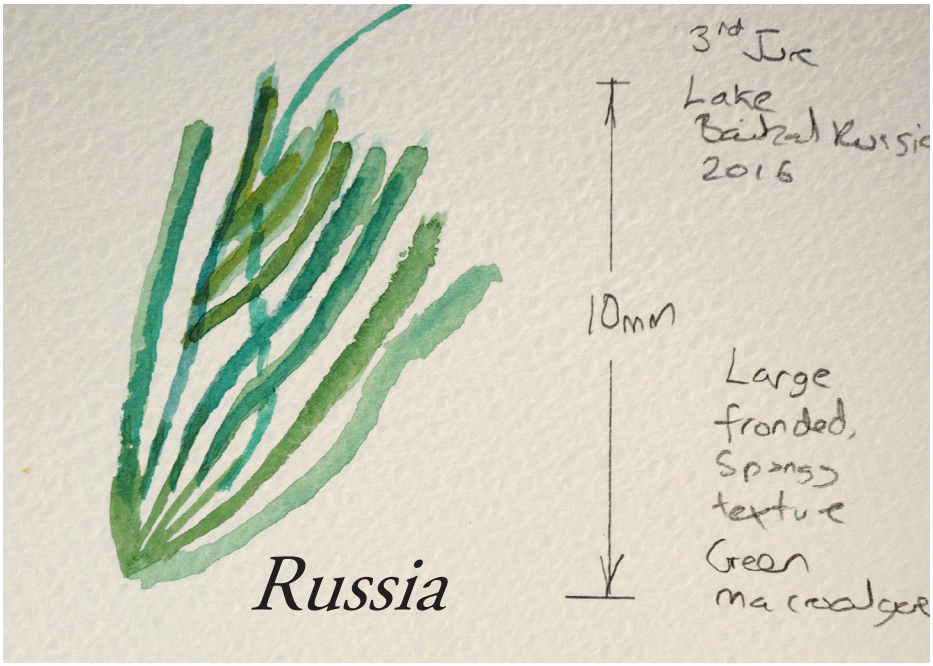
order cladophorales- multinucleate eg cladophora
order chaetophorales - cells uninucleate, single chloroplast, pure haploids eg stigeoclonium
order siphonales (chlorosiphonads) - warm waters, form macroscopic thallus, eg in Larnaca, Acetabularia mediterranea (unbrella-like cap)

Family Demidiaceae - desmids, uniclellular, acid waters , beautiful, like all those in crater lakes in Jeju!


120mm
Philippines
Siargao, Philippines
April 2017


Philippines
50mm
Siargao, Philippines - April 2017


Philippines
70mm
Siargao Philippines - April 2017 - life size
Green Algae


3rd Jun
Lake
2016
10mm
Large
fronded,
texture
Green
Russia

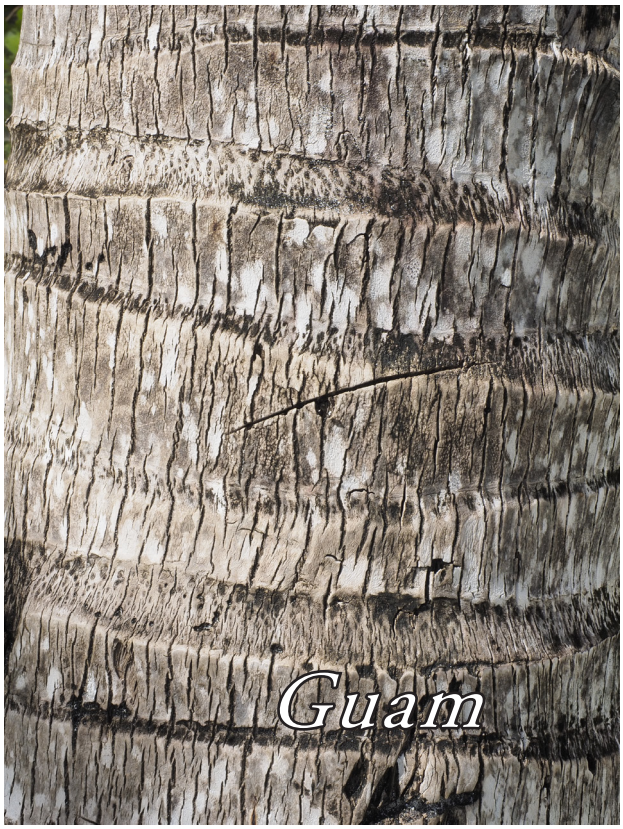

Russia - Baikal stream


40mm
Siargao, Philippines - April 2017
Philippines

c. PLANTS

PLANTAE

1. BRYOPHYTA mosses- no vascular tissue
2. LYCOPODOPHYTA club mosses- small glossy leaves, spirally arranged
3. SPHENOPHYTA horsetails
4. FILICINOPHYTA ferns
5. GRINKGOPHYTA
6. CYCADOPHYTA
7. SPERMATOPHYTA- produce seeds containing embryo +store
   - i) CONIFEROPHYTA
   - ii) ANGIOSPERMATA
     - Monocotyledons
     - Dicotyledons




CONIFERS
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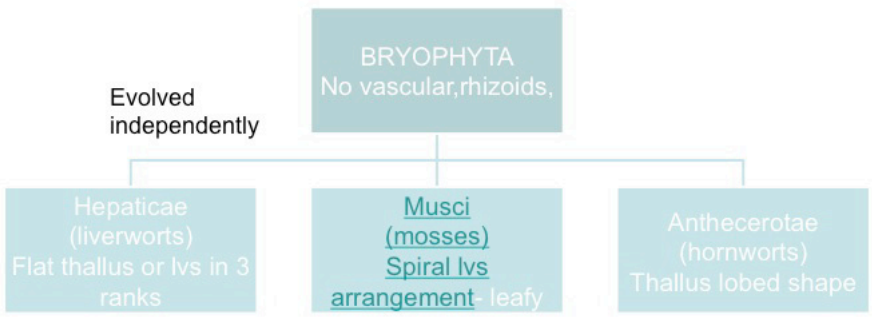
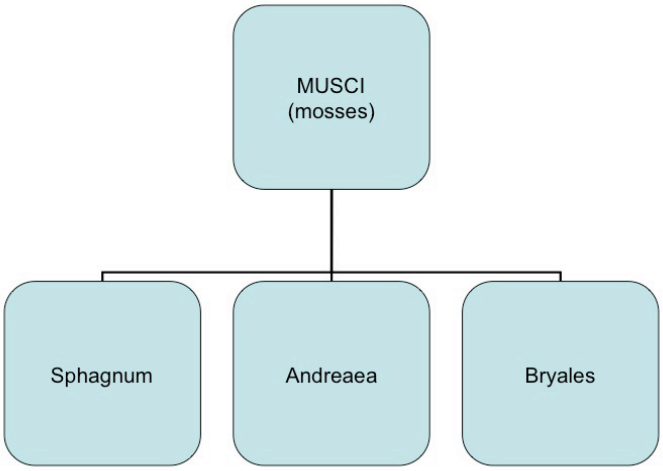
1 MOSSES


BRYOPHYTA
No vascular,rhizoids,
Evolved independently
Hepaticae (liverworts) Flat thallus or lvs in 3 ranks
Musci (mosses) Spiral lvs arrangement leafy
Anthecerotae (hornworts) Thallus lobed shape


MUSCI
(mosses)
Sphagnum
Andreaea
Bryales


Russia Eastern shore Baikal


Philippines


Guam

CONIFERS

CONIFEROPHYTA – no companion cells

- Family Pinaceae
- Cupressaceae
- Taxodiaceae
- Taxaceae

Russia -Eastern shore Baikal

Russia -
Eastern Siberia

Family Pinacea
- order Pinus= pines /needlelike (Sosna)
- order Ables = firs /flat broad leaves (Jedla)
- order Plcea = spruces /angular leaves (Smrek)
- order Tsuga = hemlocks /small leaves
- order Pseudotsuga - douglas firs
- order Larix = larches / leaves in clumps

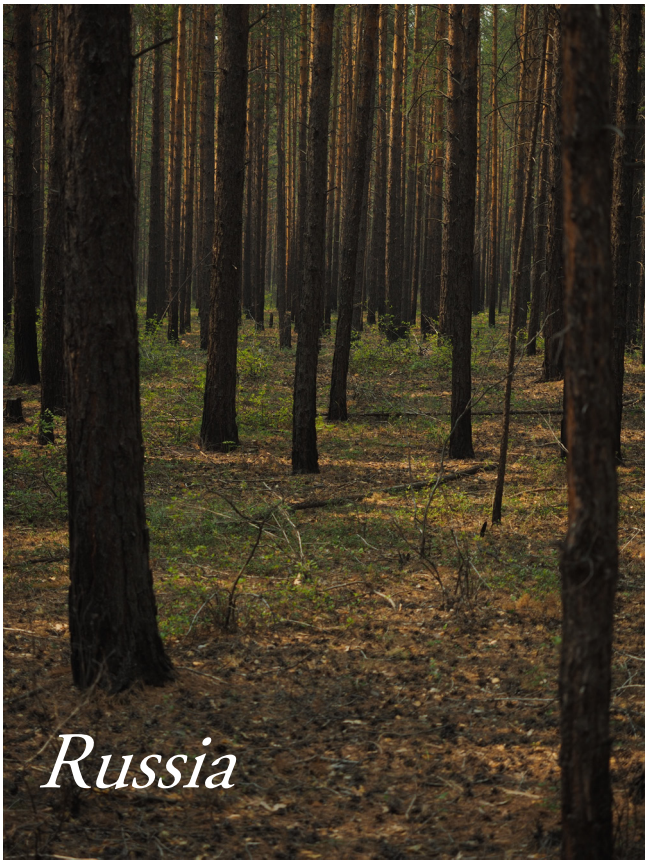
Family Cupressacea
- order Juniperus (Borievka)
- order Cypresses
- order false Cypresses

Family Taxodiaceas = redwoods

Family Taxaceae = yew


Russia -Eastern shore Baikal

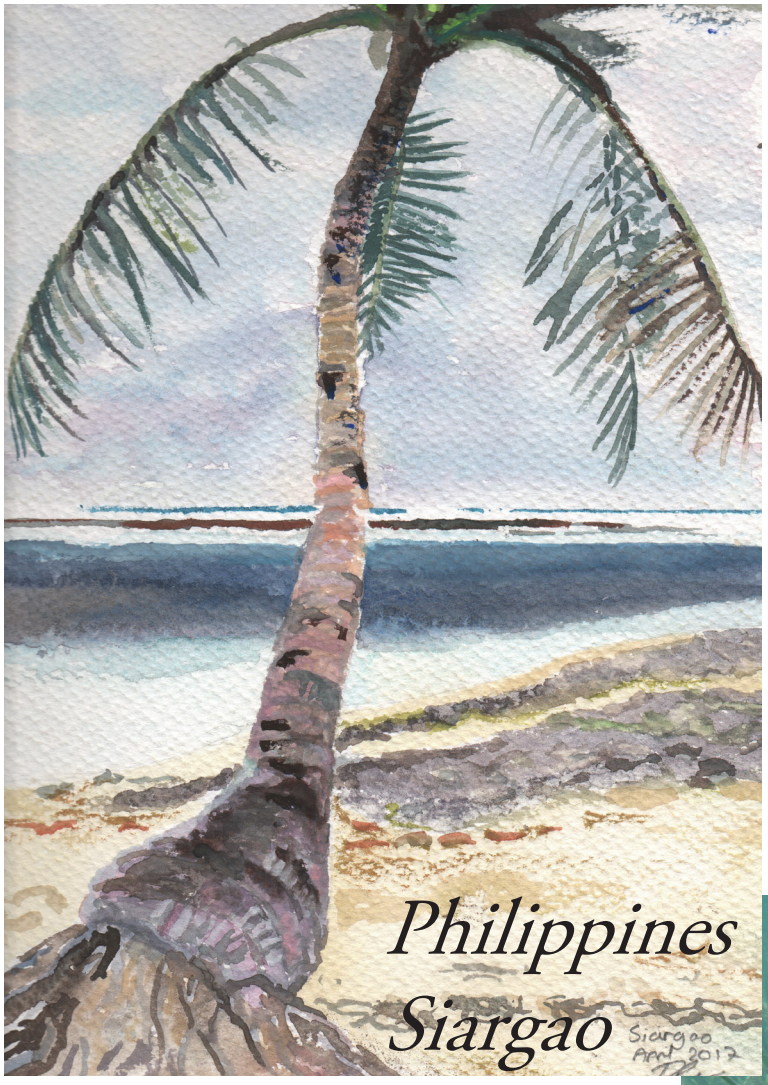

Russia -Eastern shore Baikal


Russia

Plants

7ii)

- MONOCOTYLEDON
  - Lillaceae (lilly,onion,asparagus,tulip-bulb)
  - Iridaceae (iris,crocus-florist plants)
  - Orchidaceae (bulbs)
  - Juncaceae rushes
  - Lyperaceae / Cyperaceae sedges
  - Gramineae grasses
    - Bambusineae bamboo
    - Arundinoideae reed grasses
    - Chloridoineae tufted grasses
    - Panicoideae maize
    - Pooideae cereals
  - Alismataceae – water plant family
  - Butomaceae – flowering rushes
  - Amaryllidaceae- daffodil
  - Araceae – Arum
  - Sparganiaceae – Bur reed
  - Typhaceae - reedmace


Philippines
Siargao

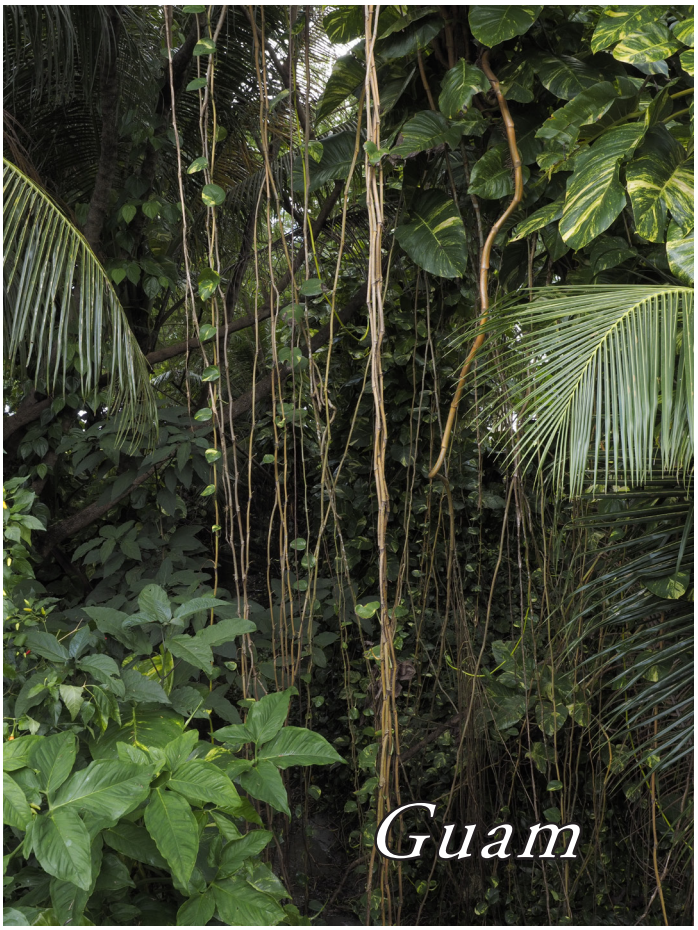

Philipines


Philippines
Siargao


Philippines
Mango Plant


Philippines


Guam


Guam


Guam


Guam


Guam


Russia - Baikal stream


Russia -Eastern shore Baikal


Russia -
Eastern shore stream of Baikal
fruiting stem of Liliaceous species
(fallen in water stream by accident)

iv) DICOTYLEDONS

- DICOTYLEDONS
  - RANUNCULACEAE
  - PAPAVERACEAE
  - SOLANACEAE
  - SALICACEAE
  - LEGUMINOSAE (FABACEAE)
  - CRUCIFEREAE(BRASSICACEAE)
  - ROSACEAE
  - APIACEAE (UMBELLIFERAE)
  - FAGACEAE (beech,oak,hazel,chestnut)
  - BETULACEAE
  - LABIATAE (Lamiaceae)
  - SCROPHULARIACEAE
  - ASTERACEAE (Compositae- Daisy)
  - TILIACEAE (lime,elm,tilia)
  - SAXIFRAGACEAE
  - ACERACEAE
  - PRIMULACEAE
  - MAGNOLIACEAE

Phillipines

Philippines

Philippines

Philippines

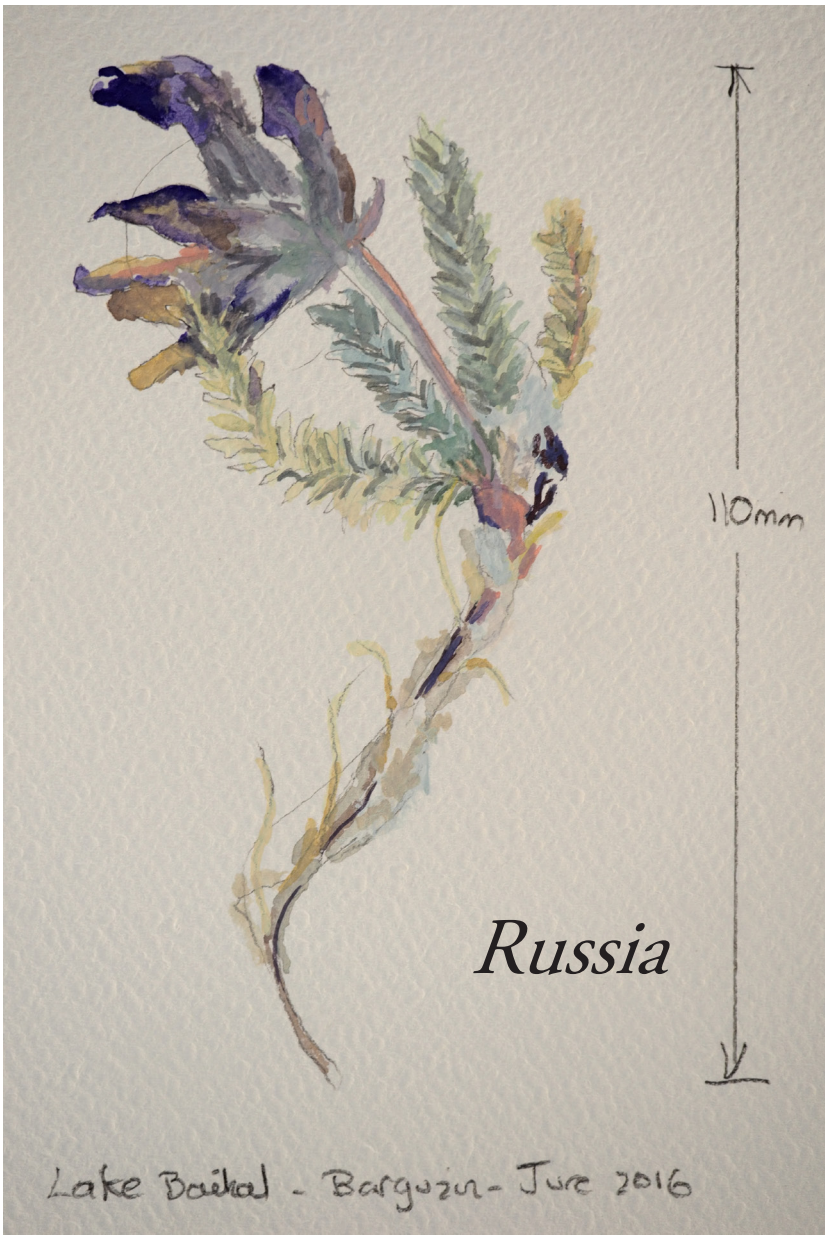
Plants


Russia

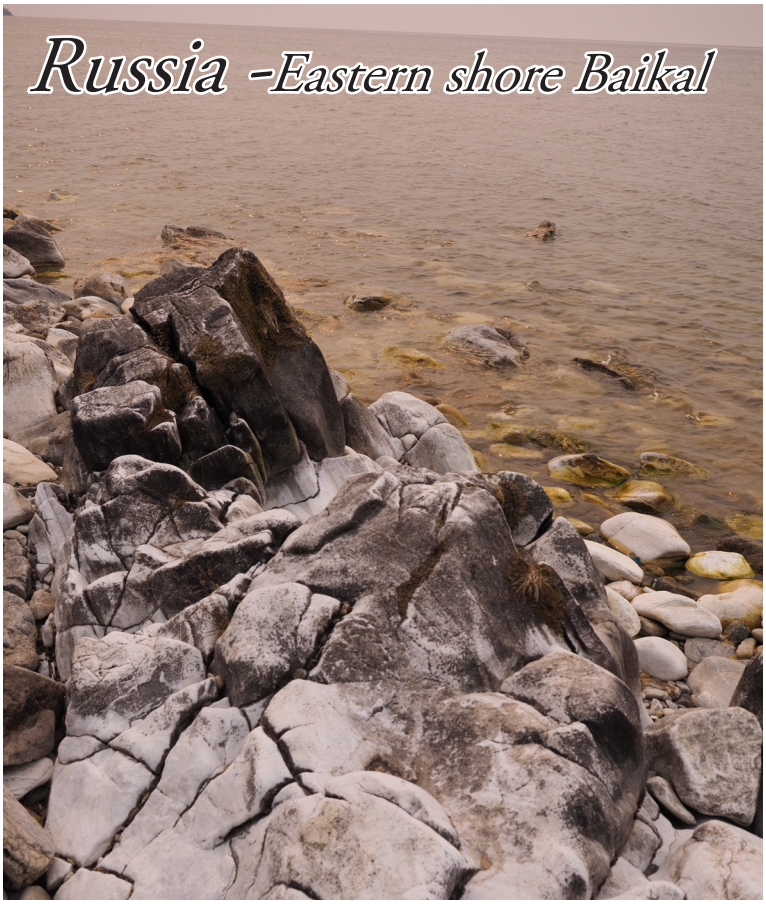

90 mm
Russia
Lake Baikal - Bargozin Russia June 2016

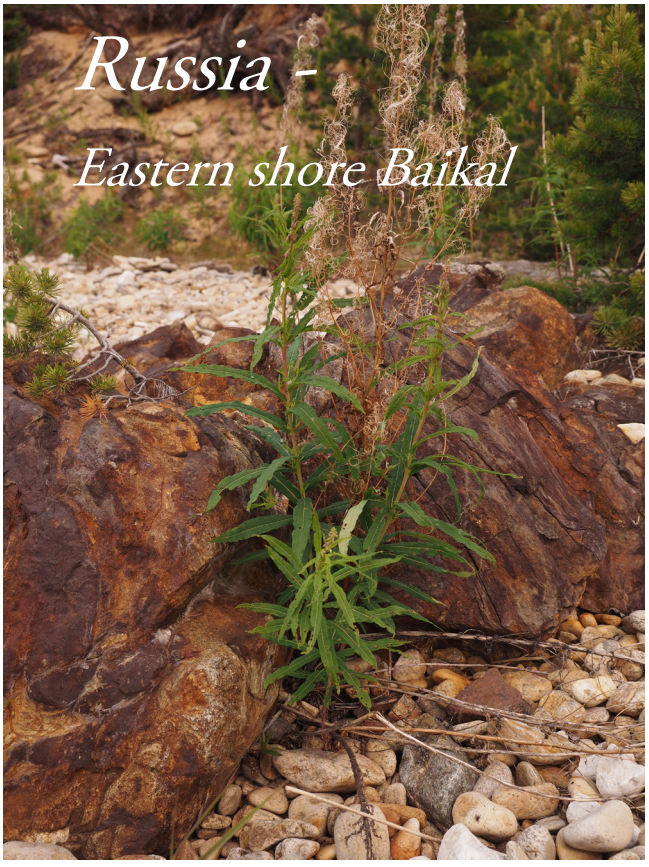

Russia


Russia

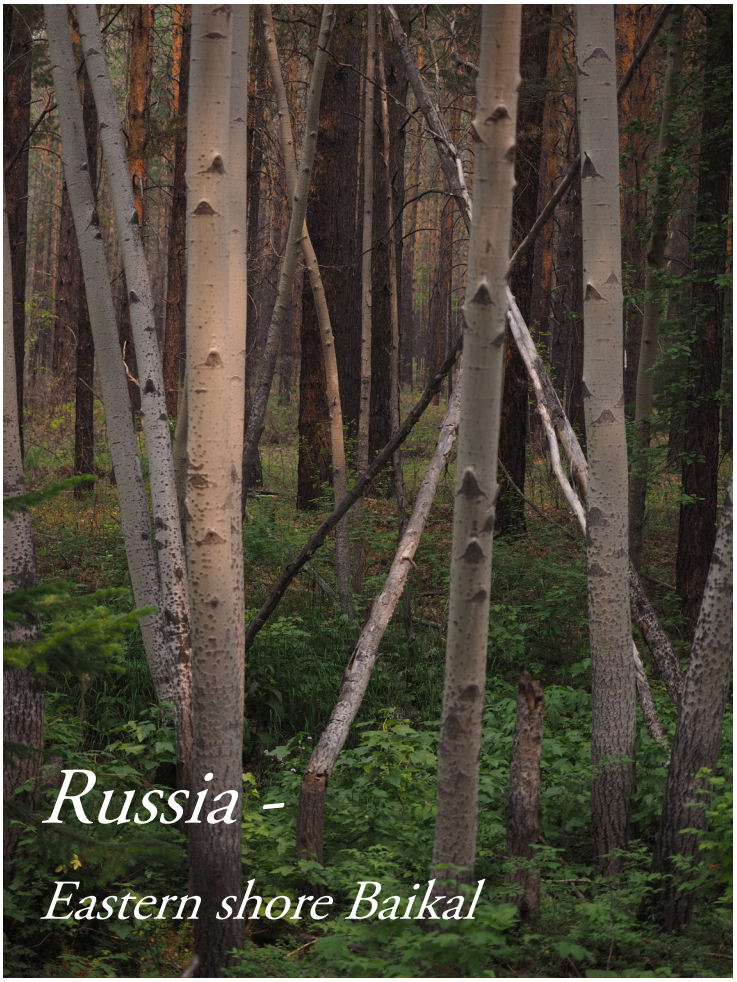

110mm
Russia
Lake Baikal - Barguzin - June 2016


Russia


Russia -Eastern shore Baikal

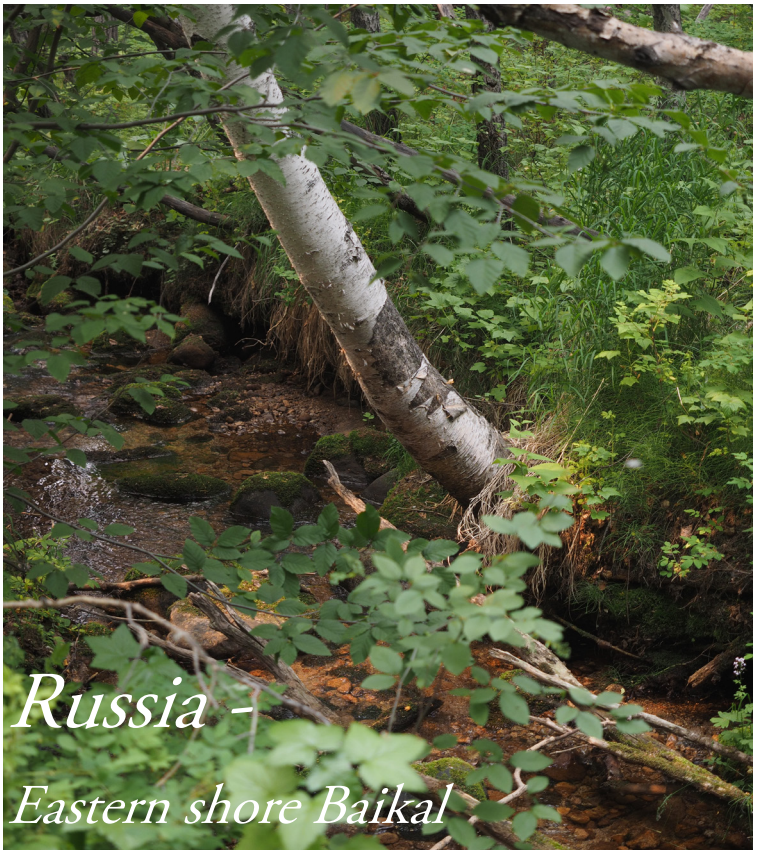

Russia -
Eastern shore Baikal

Plants



Russia -

Eastern shore Baikal



Russia -

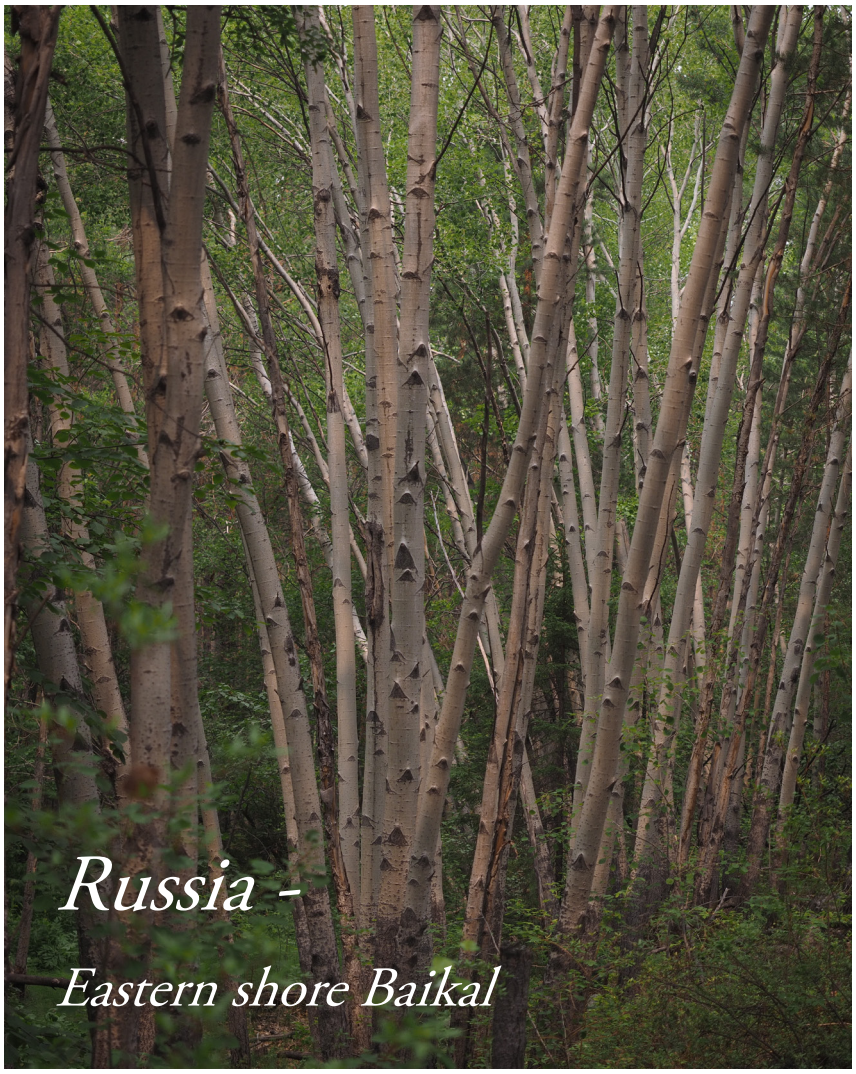
Eastern shore Baikal

Russia -

Eastern shore Baikal

Russia -

Eastern shore Baikal



Russia -

Eastern shore Baikal

Russia -

Eastern shore Baikal


Russia -
Eastern shore Baikal

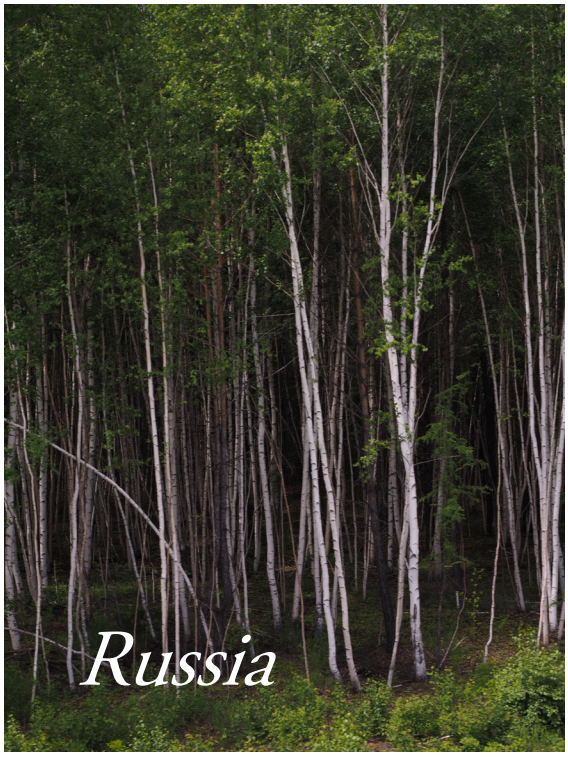

Russia


Russia


Russia
June 2016
Lake Baikal - Barguzin

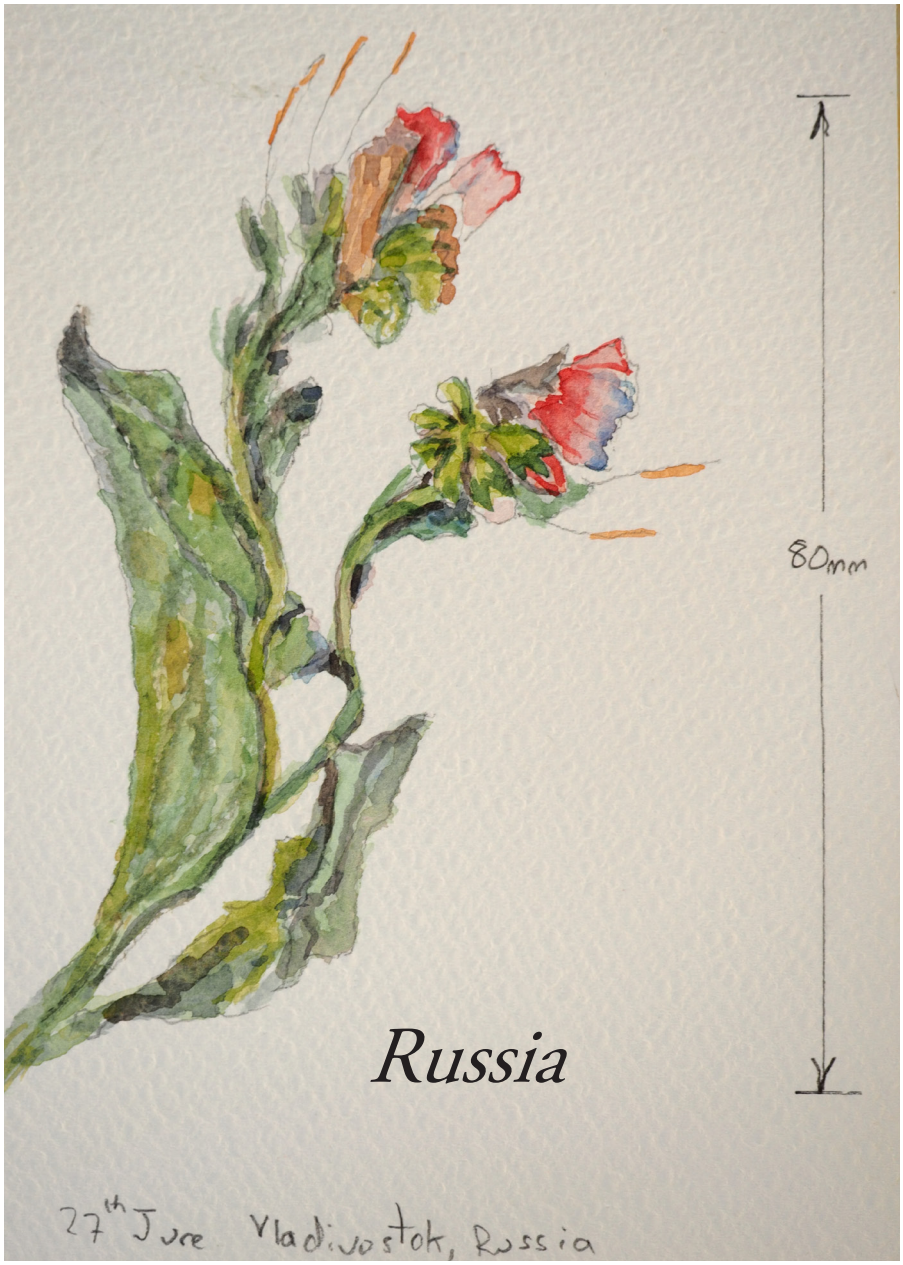

Russia -
Eastern shore Baikal

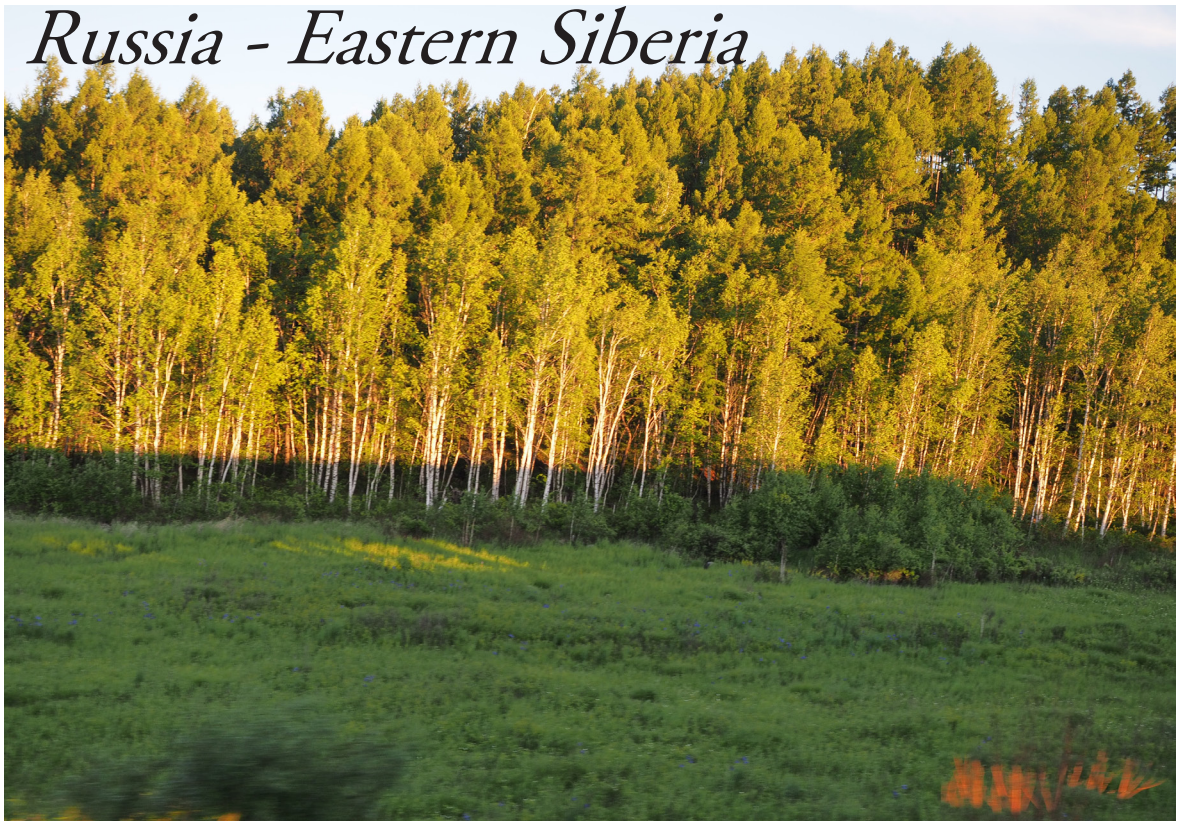
Plants


Russia


100 mm
Russia
Lake Baikal - Bargozin - June 2016


Russia - Eastern Siberia


80mm
Russia
27th June Vladivostok, Russia


Russia - Eastern Siberia

Plants

Russia

Russia -

Eastern shore Baikal

d. FUNGI

FUNGI

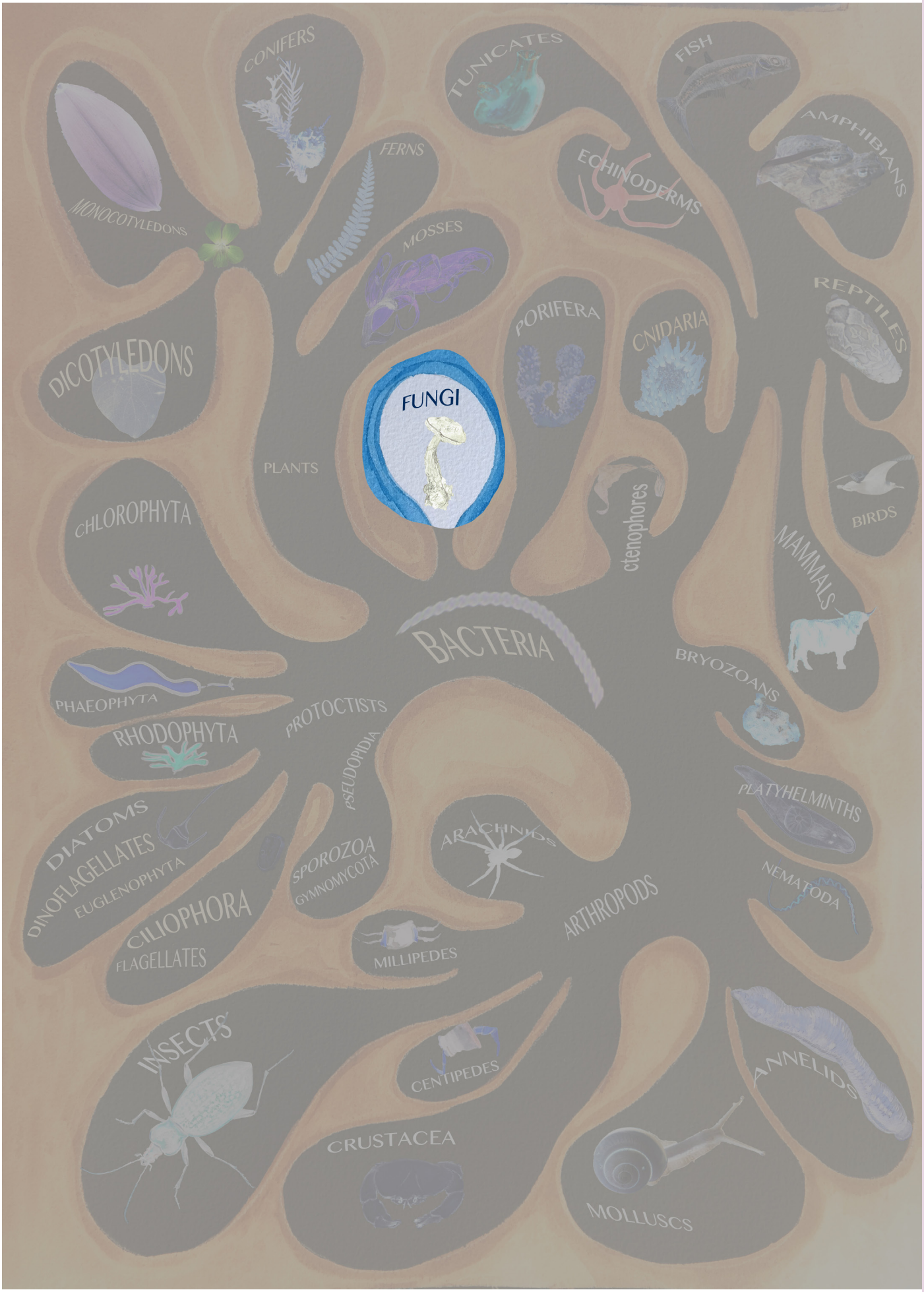
Chitin wall, hyphae, spores without flagella

1. **Ascomycota 'bag' *sac fungi***
   Spores inside elongated oval sac
2. **Basidiomycota *club fungi***
   Spores extenal on a basidium
3. **Deuteromycota 'second'**
4. **Mycophycota *lichen***

2 Basidiomycota *club fungi*

Spores extenal on a basidium

- **Aphyllophorales**
  Bracket/sheet shapes
- **Agaicales**
  Mushroom shaped eg. Boletus
- **Gasteromycetales**
  Spores produced inside fungus rather than exposed surface
- **Tremellales**
  Jelly-like texture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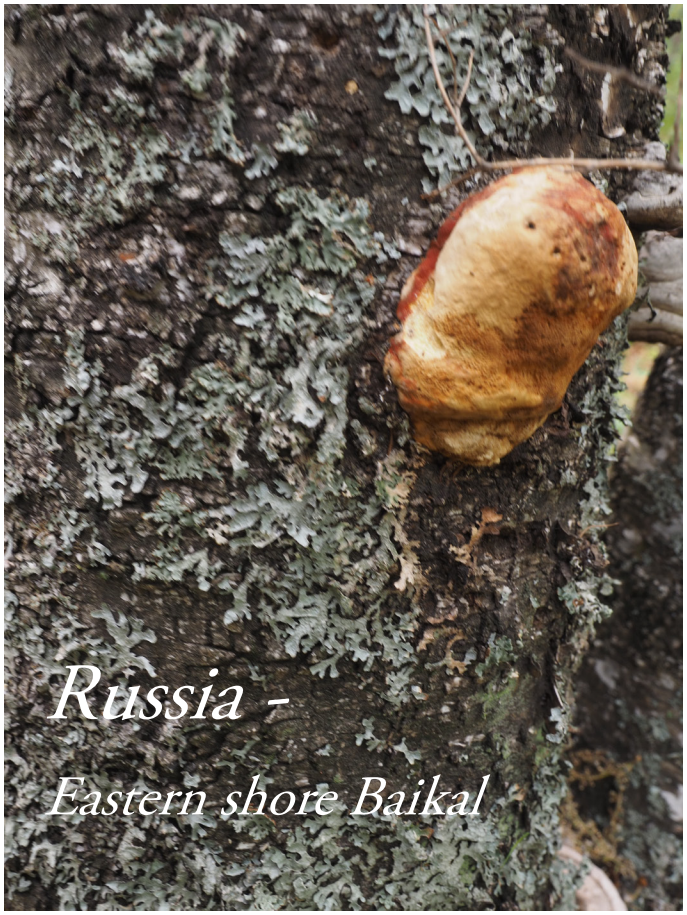
2) Class Basidiomycota

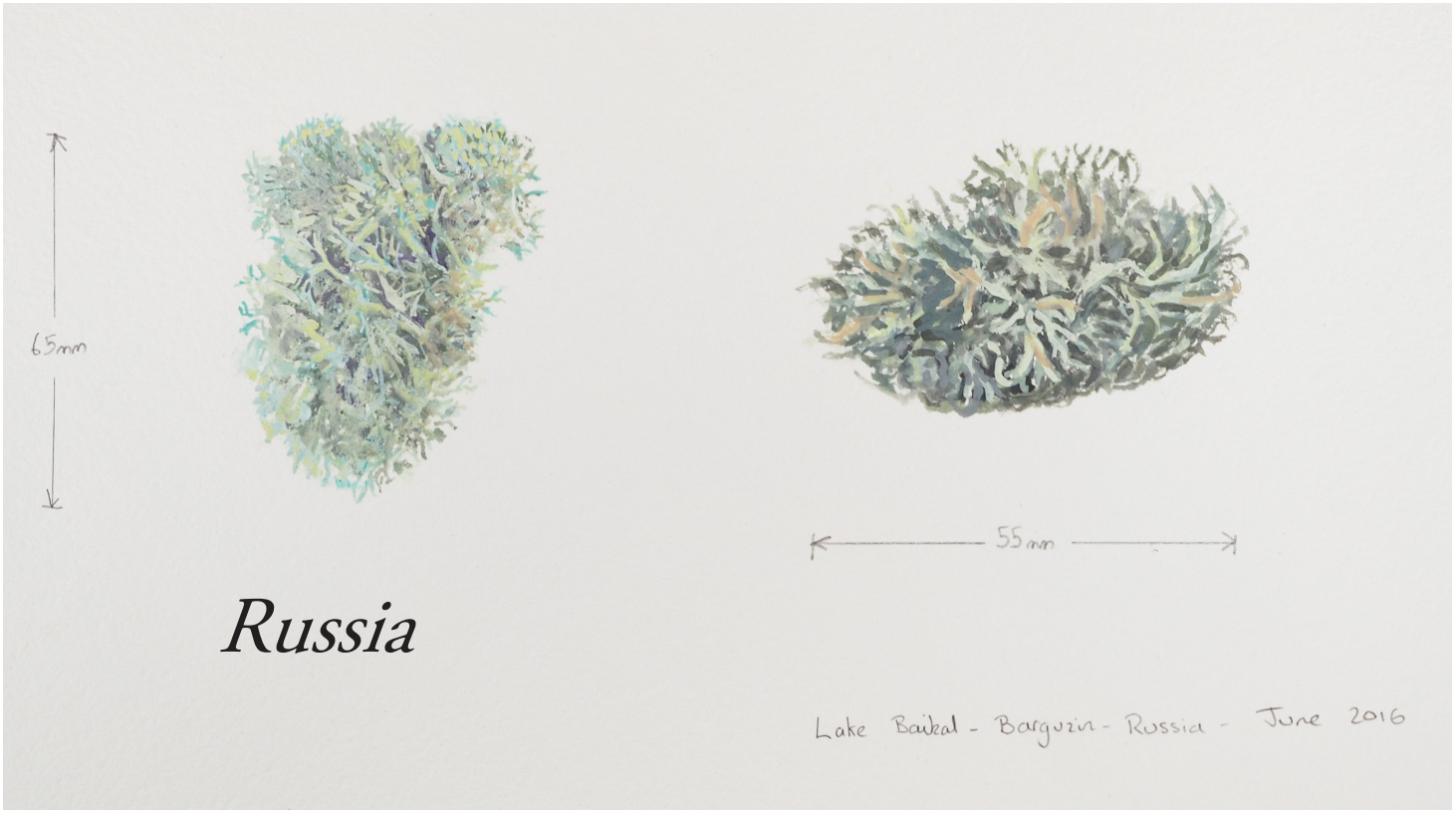


4) Class Mycophycota - Lichen

Russia

Russia -

Eastern shore Baikal



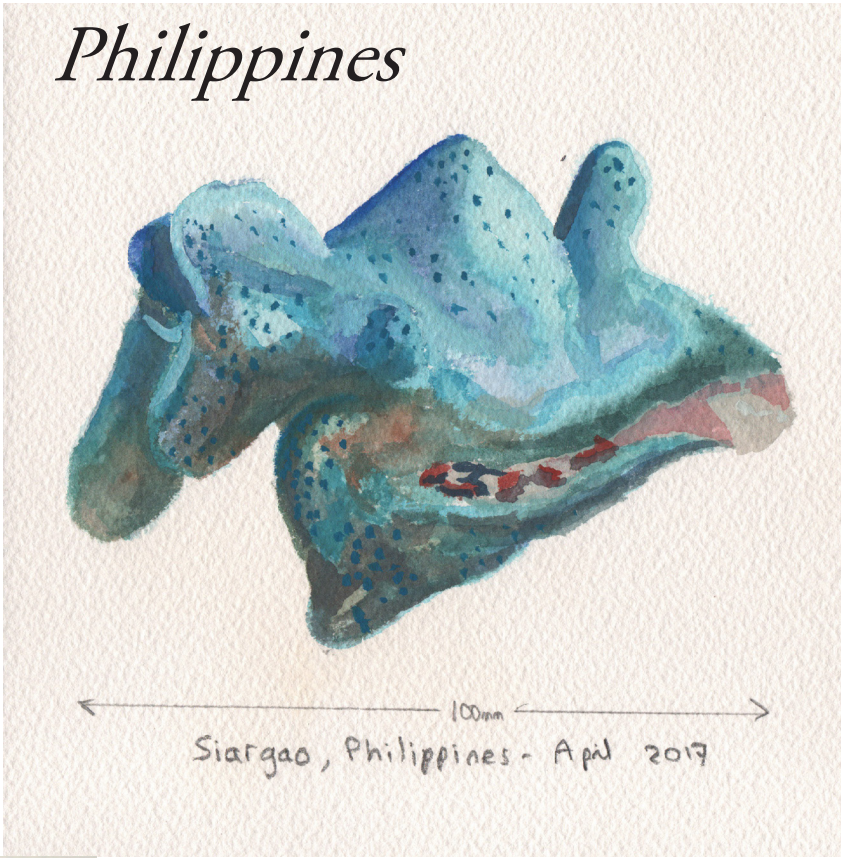
Russia

e. PORIFERA

no recognisable
individual zooids

Philippines

Philippines



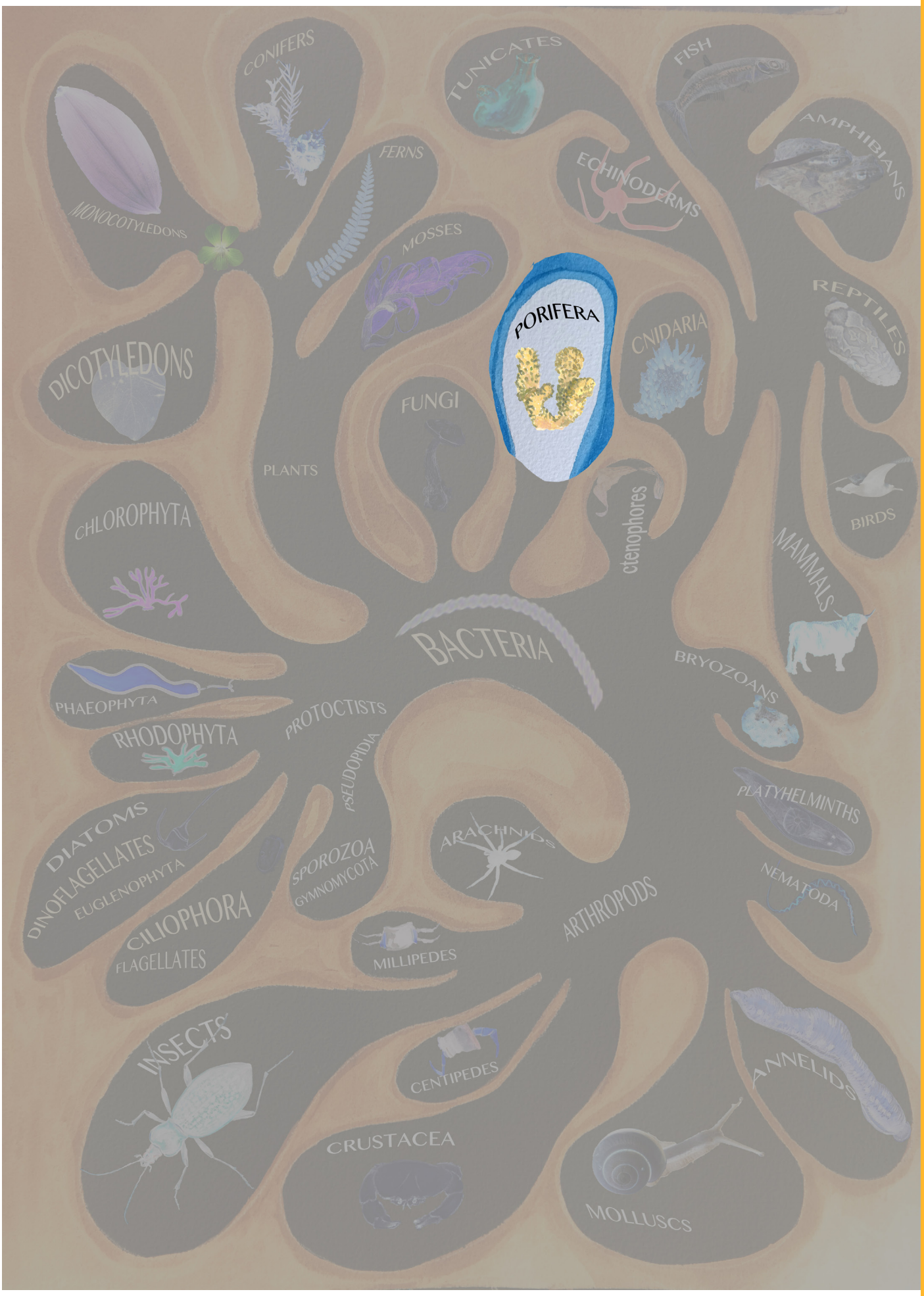
Russia -

Eastern shore Baikal

Russia

Lubomirskia baicalensis

Guam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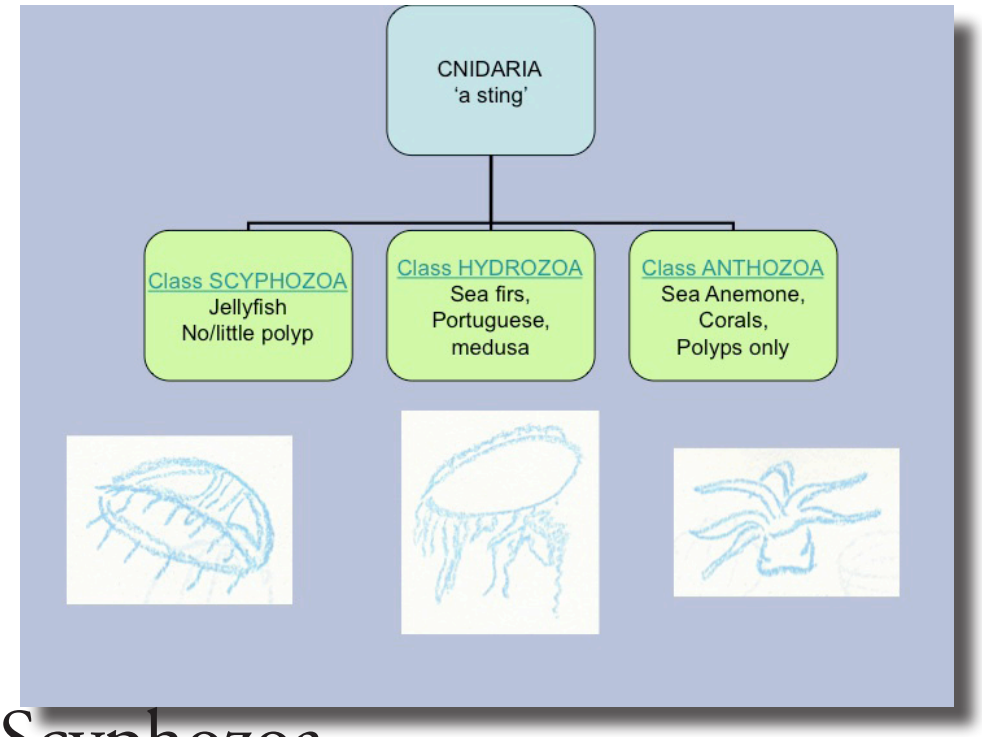
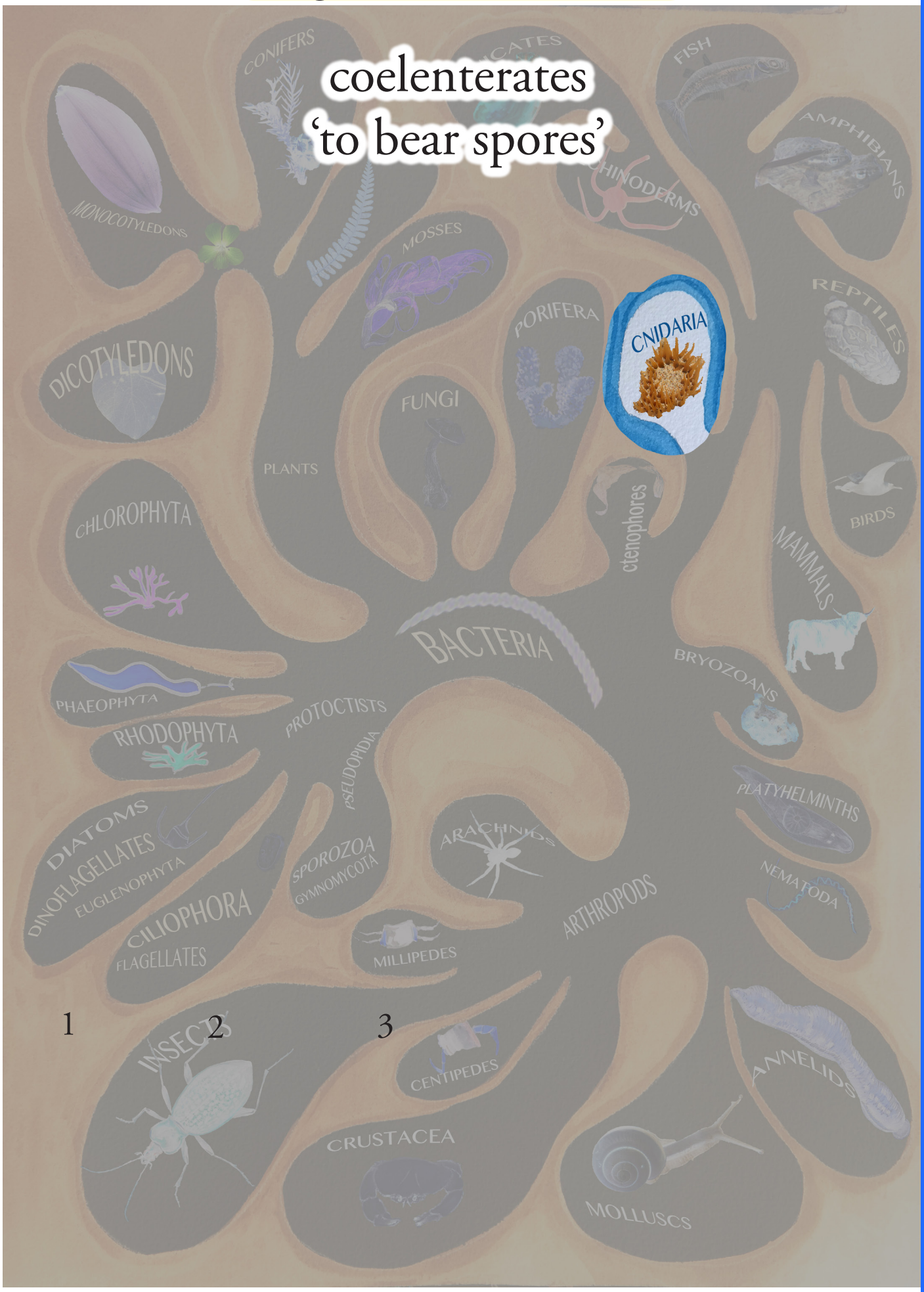


1. Class Scyphozoa

medusa is sexual phase
poly is asexual phase

2. Class Hydrozoa

g. CNIDARIA


coelenterates
'to bear spores'
CONIFERS
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1
2
3
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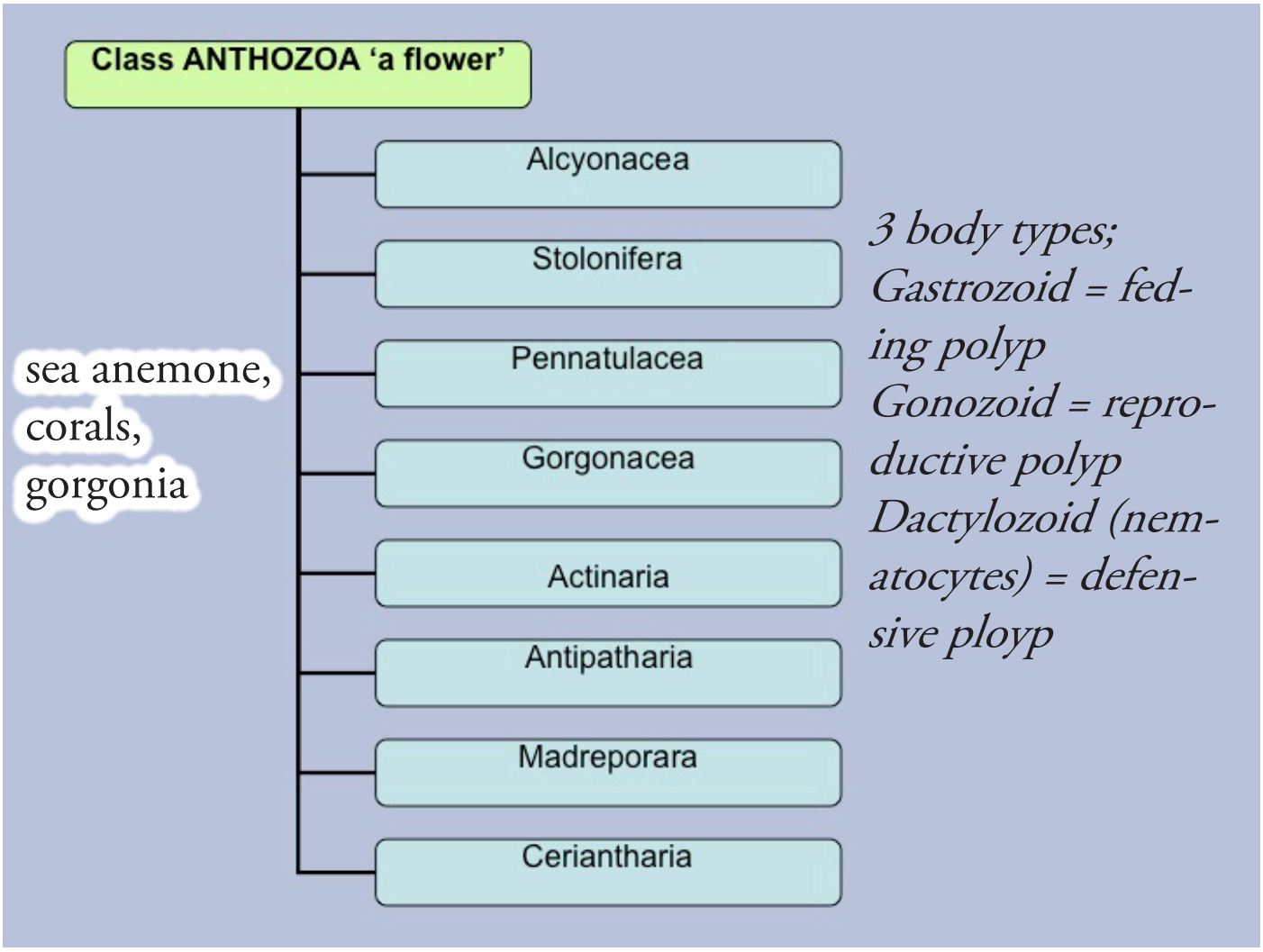
3. Class Anthozoa




Guam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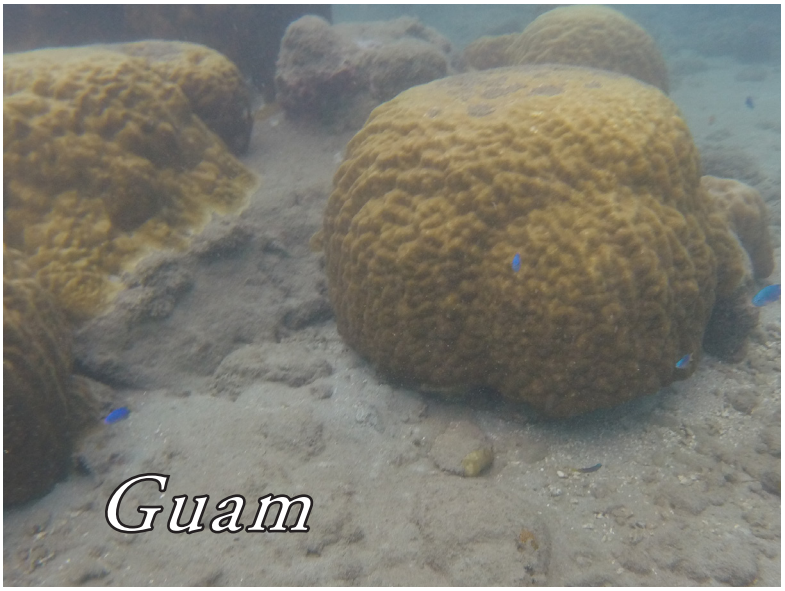
Guam


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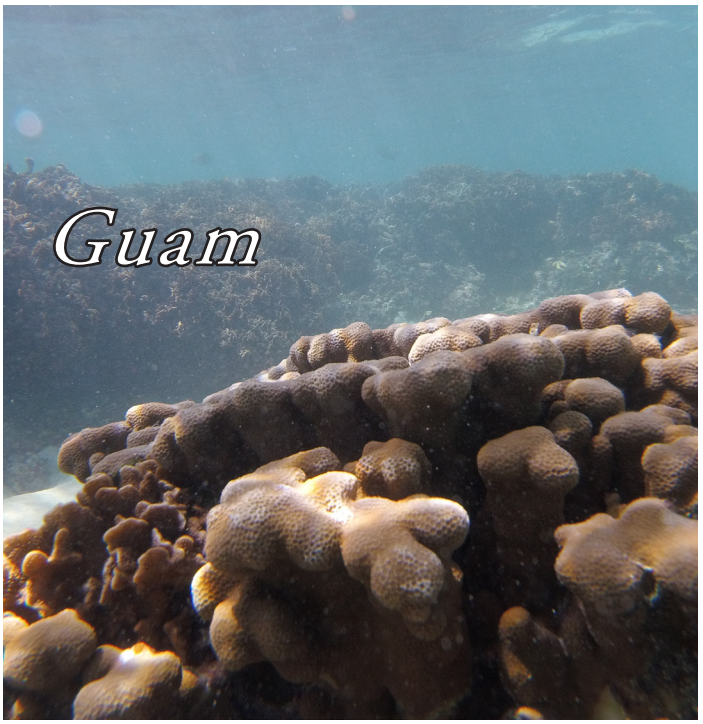
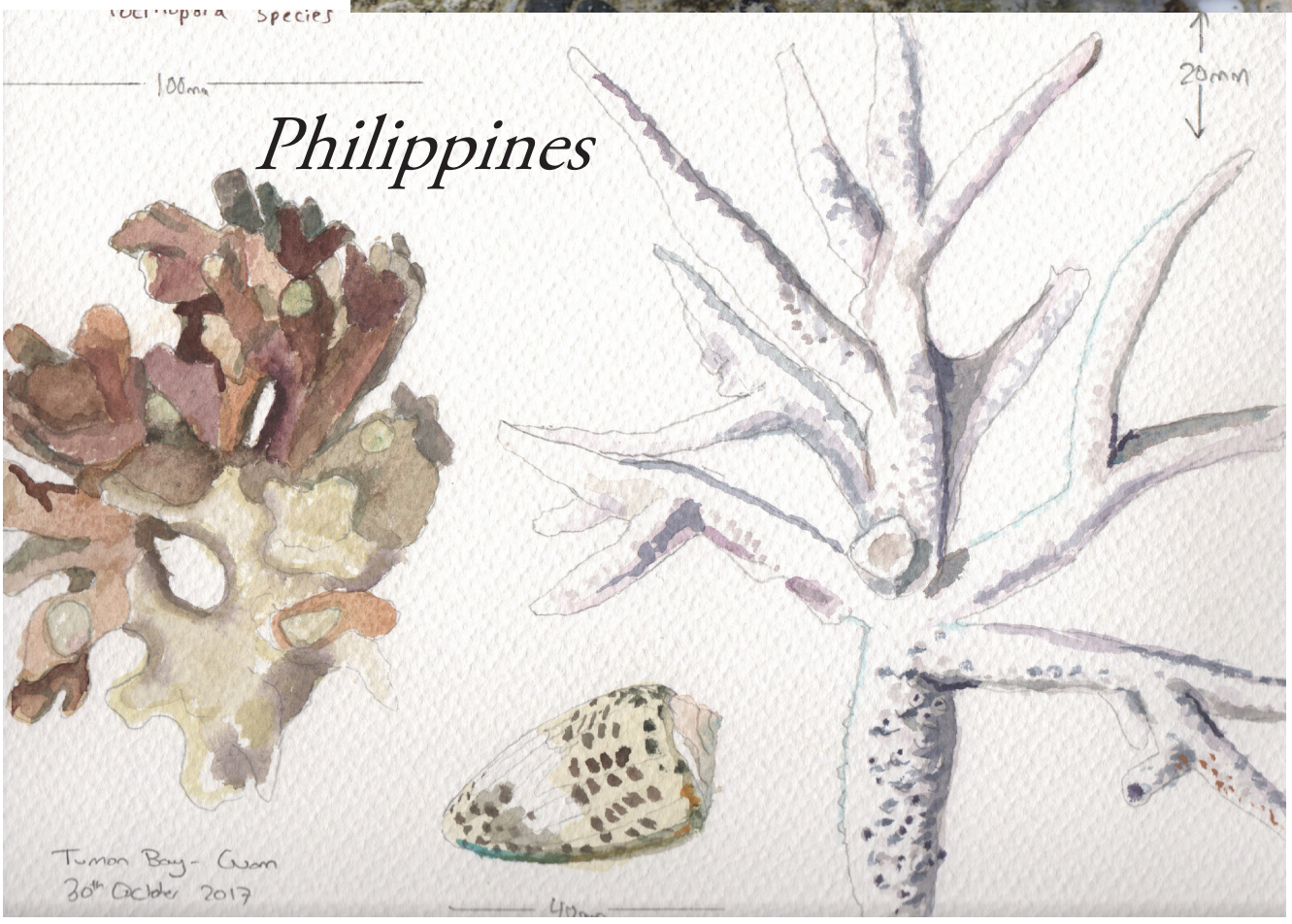
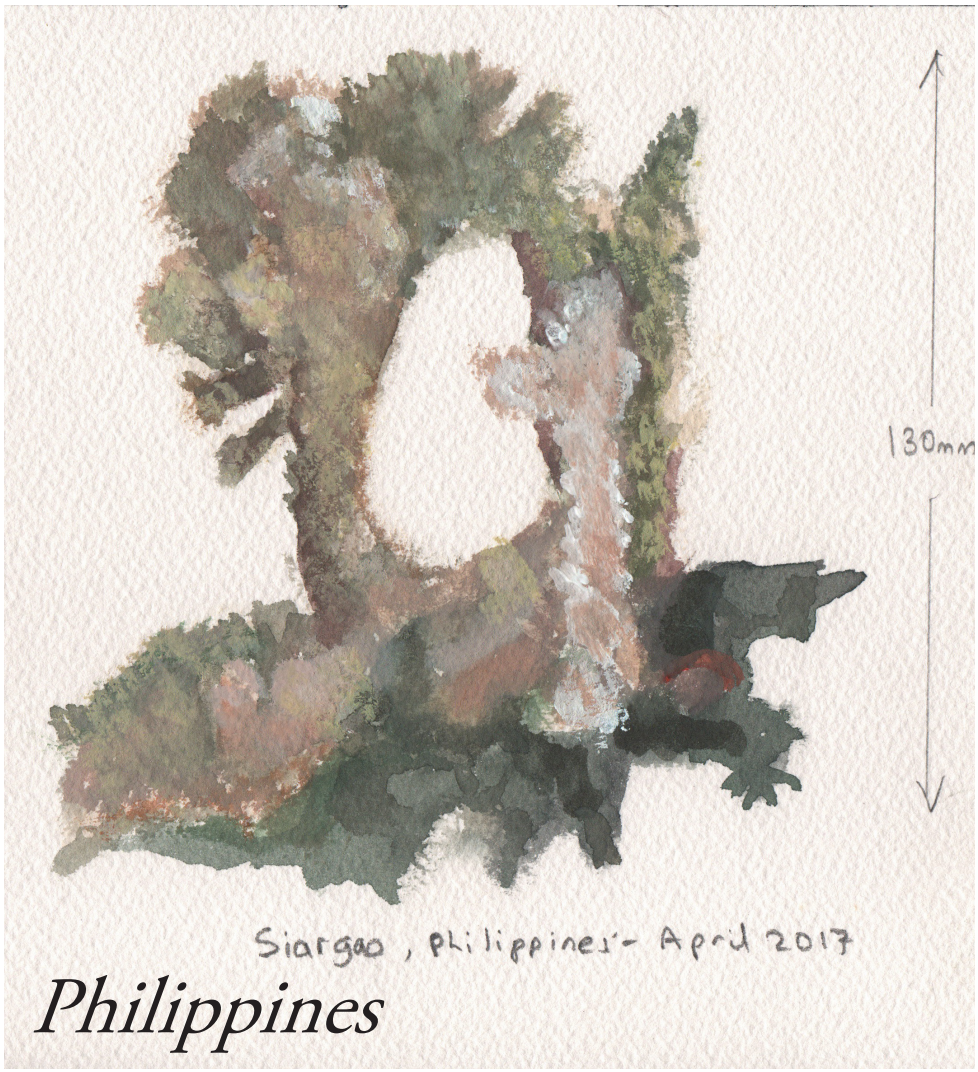

Guam


Philippines


Philippines


Species
100mm
20mm
Philippines
Tumon Bay - Guam
30th October 2017


130mm
Siargao , Philippines - April 2017
Philippines


Philippines


Siargao, Philippines - April 2017


20mm
120mm
Philippines
Siargao, Philippines. - April 2017

Philippines

Philippines


Philippines
80mm
Siargao, Philippines- April 2017

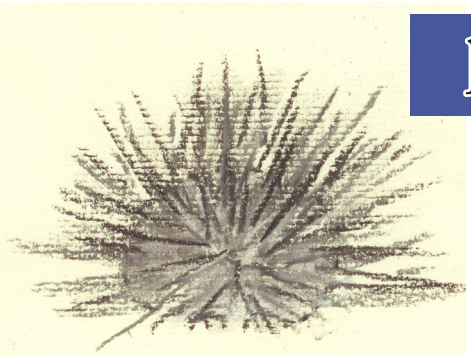

Philippines


70mm
Philippines


Guam

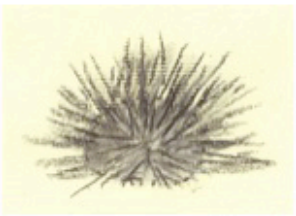

Mariannas trench -
about 200km south
from here


Guam

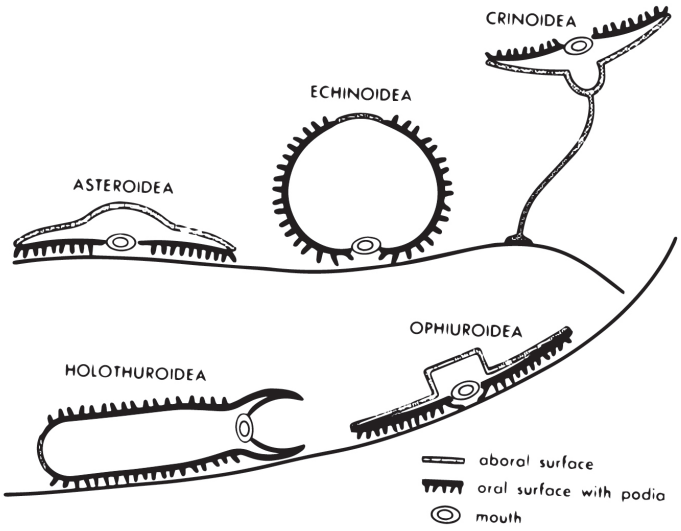


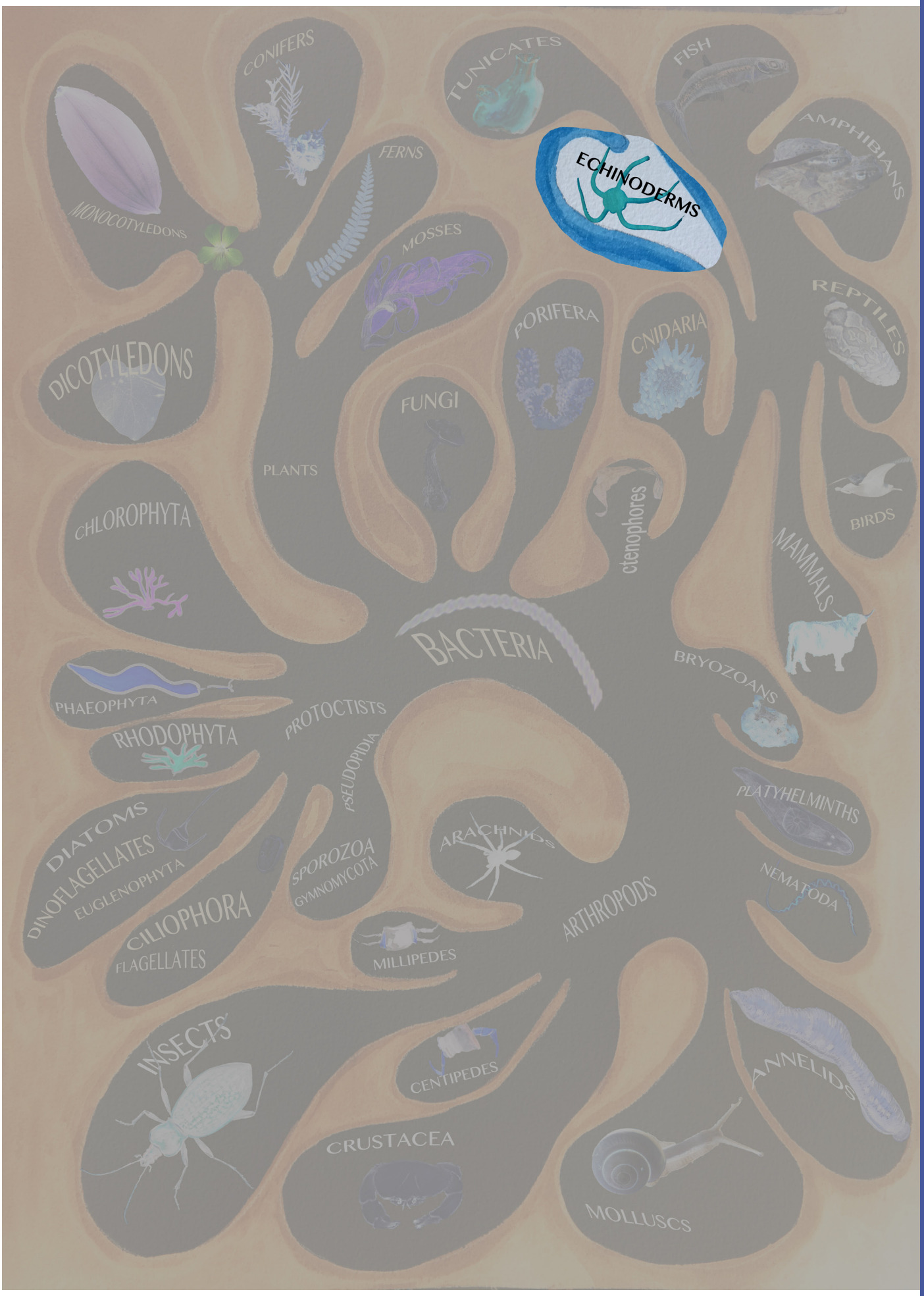
h. ECHINODERMS

- ECHINODERMATA
  - 1 Asteroidea (starfish)
  - 2 Crinoidea (feather stars)
  - 3 Echinoidea (sea urchins)
  - 4 Holothuroidea (sea cucumbers)



3. Class ECHINOIDEA




CONIFERS
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REPTILES
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CNIDARIA
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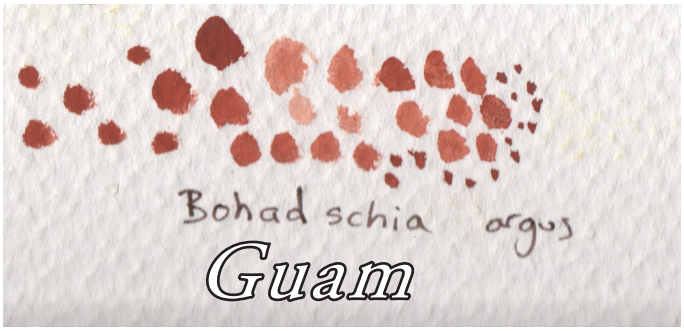
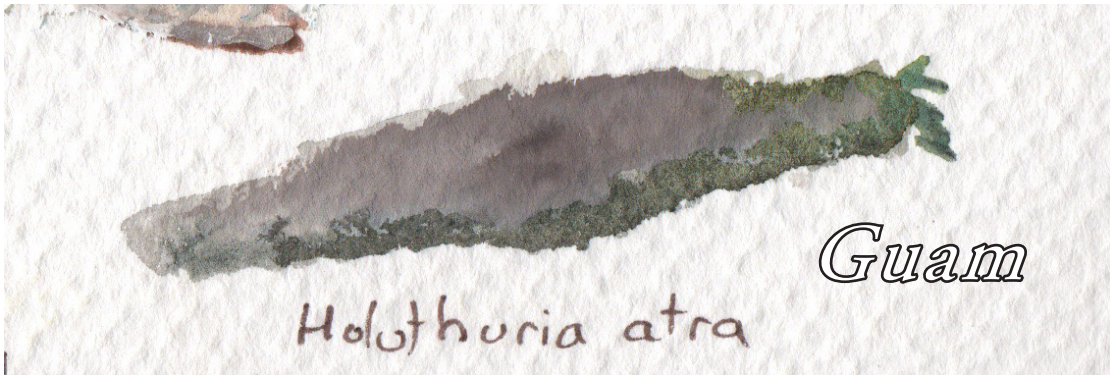
ARTHROPODS
MILLIPEDES
INSECTS
CENTIPEDES
ANNELIDS
CRUSTACEA
MOLLUSCS


Guam
Bohadschia species


Guam
Holothuria

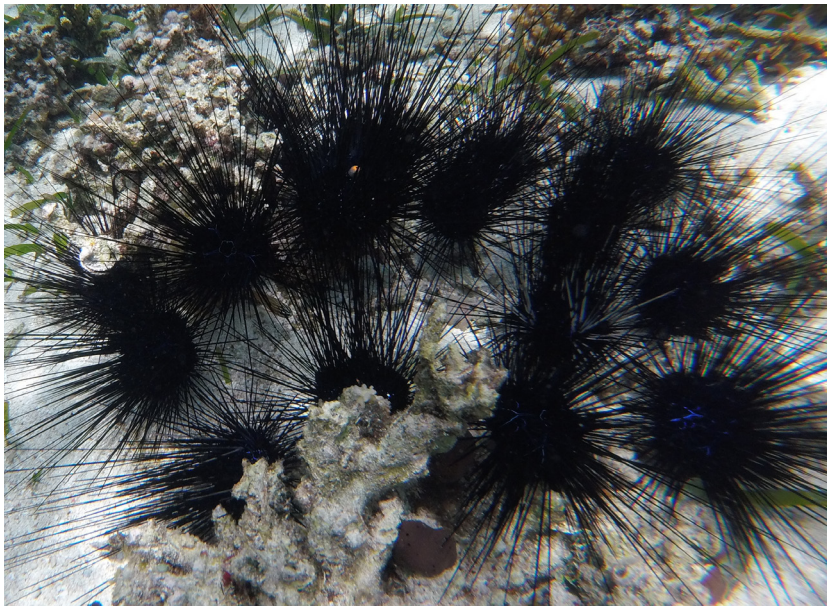

Bohadschia argus
Guam


Guam
Holothuria atra


Guam

Philippines
Siargao

Philippines
Siargao



Philippines
Siargao

j. FISH

VERTEBRATA

- AGNATHA (without jaw)
- GNATHOSTOMATA (jaw)

AGNATHA (jawless, lateral line)

- Order Myxiniformes (slime), hagfish, marine 32spp.
- Order Petromyzoniformes Lampreys, 41spp.

GNATHOSTOMATA

- CHONDRICHTHYES (cartilage) Developed from ost., lateral line, internal fertilisation
- OSTEICHTHYES (bone), external fertilisation
- AMPHIBIA, 4 limbs
- REPTILIA, no larval stage, amniote eggs
- AVES
- MAMMALIA

CHONDRICHTHYES, mostly marine, but some in Amazon, developed **from** bony fish

- HOLOCEPHALI 25spp. (upper jaw fused to skull, 1 gill opening), tafish, rabbitfish, Chimera, very long whip like tail, male claspers, smooth skin
- ELASMOBRANCHI 650spp. (upper jaw hangs free, 5-7 gill slits)

ELASMOBRANCHII 5-7 gill slits, dermal dentricles, male claspers

- **Pleurotremata** (gills on top of pectoral,), cannibalism of young in uterus of Porbengle s Sharks
- **Hypotremata** (gills underneath) Skates & Rays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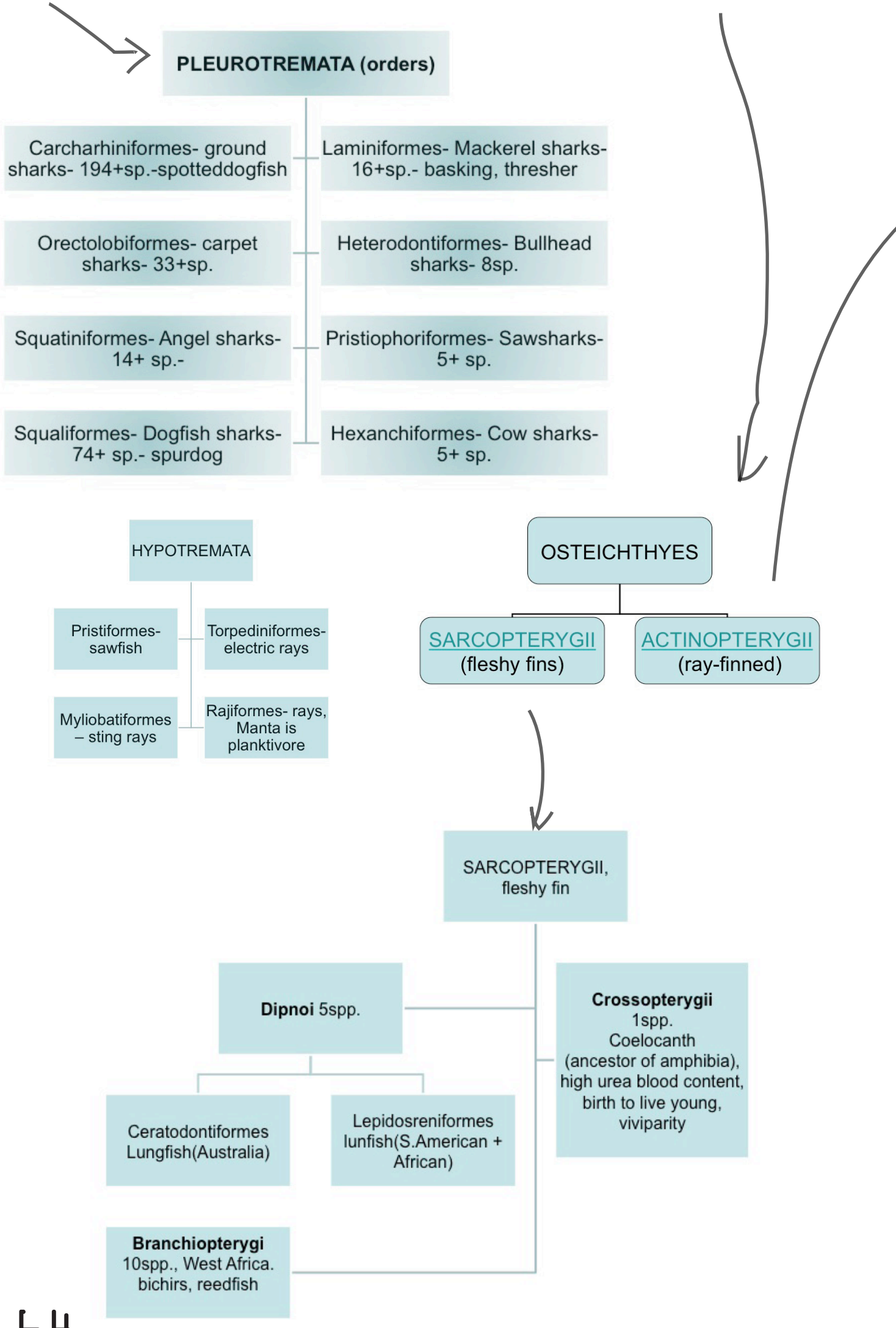
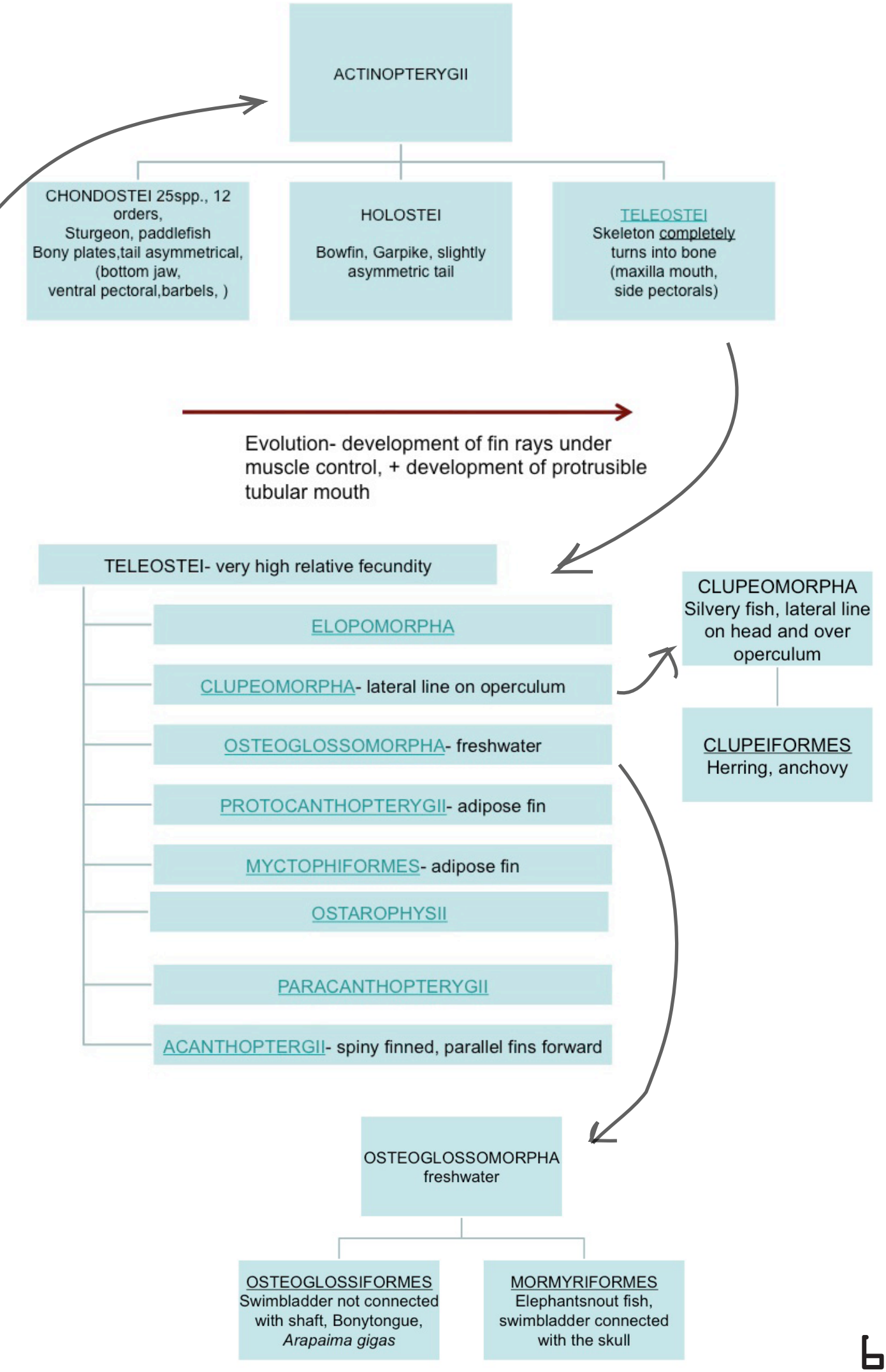
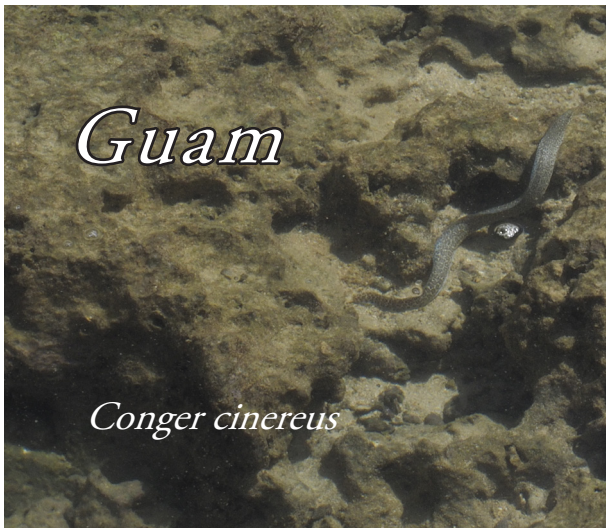

PLEUROTREMATA (orders)
Carcharhiniformes- ground sharks- 194+sp.-spotteddogfish
Laminiformes- Mackerel sharks- 16+sp.- basking, thresher
Orectolobiformes- carpet sharks- 33+sp.
Heterodontiformes- Bullhead sharks- 8sp.
Squatiniformes- Angel sharks- 14+ sp.-
Pristiophoriformes- Sawsharks- 5+ sp.
Squaliformes- Dogfish sharks- 74+ sp.- spurdog
Hexanchiformes- Cow sharks- 5+ sp.
HYPOTREMATA
Pristiformes- sawfish
Torpediniformes- electric rays
Myliobatiformes – sting rays
Rajiformes- rays, Manta is planktivore
OSTEICHTHYES
SARCOPTERYGII (fleshy fins)
ACTINOPTERYGII (ray-finned)
SARCOPTERYGII, fleshy fin
Dipnoi 5spp.
Crossopterygii 1spp. Coelocanth (ancestor of amphibia), high urea blood content, birth to live young, viviparity
Ceratodontiformes Lungfish(Australia)
Lepidosreniformes lunfish(S.American + African)
Branchiopterygi 10spp., West Africa. bichirs, reedfish


ACTINOPTERYGII
CHONDOSTEI 25spp., 12 orders,
Sturgeon, paddlefish
Bony plates,tail asymmetrical,
(bottom jaw,
ventral pectoral,barbels,)
HOLOSTEI
Bowfin, Garpike, slightly asymmetric tail
TELEOSTEI
Skeleton completely turns into bone
(maxilla mouth,
side pectorals)
Evolution- development of fin rays under muscle control, + development of protrusible tubular mouth
TELEOSTEI- very high relative fecundity
ELOPOMORPHA
CLUPEOMORPHA- lateral line on operculum
OSTEOGLOSSOMORPHA- freshwater
PROTOCANTHOPTERYGII- adipose fin
MYCTOPHIFORMES- adipose fin
OSTAROPHYSII
PARACANTHOPTERYGII
ACANTHOPTERGII- spiny finned, parallel fins forward
CLUPEOMORPHA
Silvery fish, lateral line on head and over operculum
CLUPEIFORMES
Herring, anchovy
OSTEOGLOSSOMORPHA
freshwater
OSTEOGLOSSIFORMES
Swimbladder not connected with shaft, Bonytongue,
Arapaima gigas
MORMYRIFORMES
Elephantsnout fish, swimbladder connected with the skull

ELOPOMORPHA
Leptocephalon
larval form

ANGUILLIFORMES
Eels (leptocephalon larvae 1mm with **no** gills).
Conger eels, 19 families

ELOPIFORMES
Tarpon, Carribean, 2m, breed in Mangroves

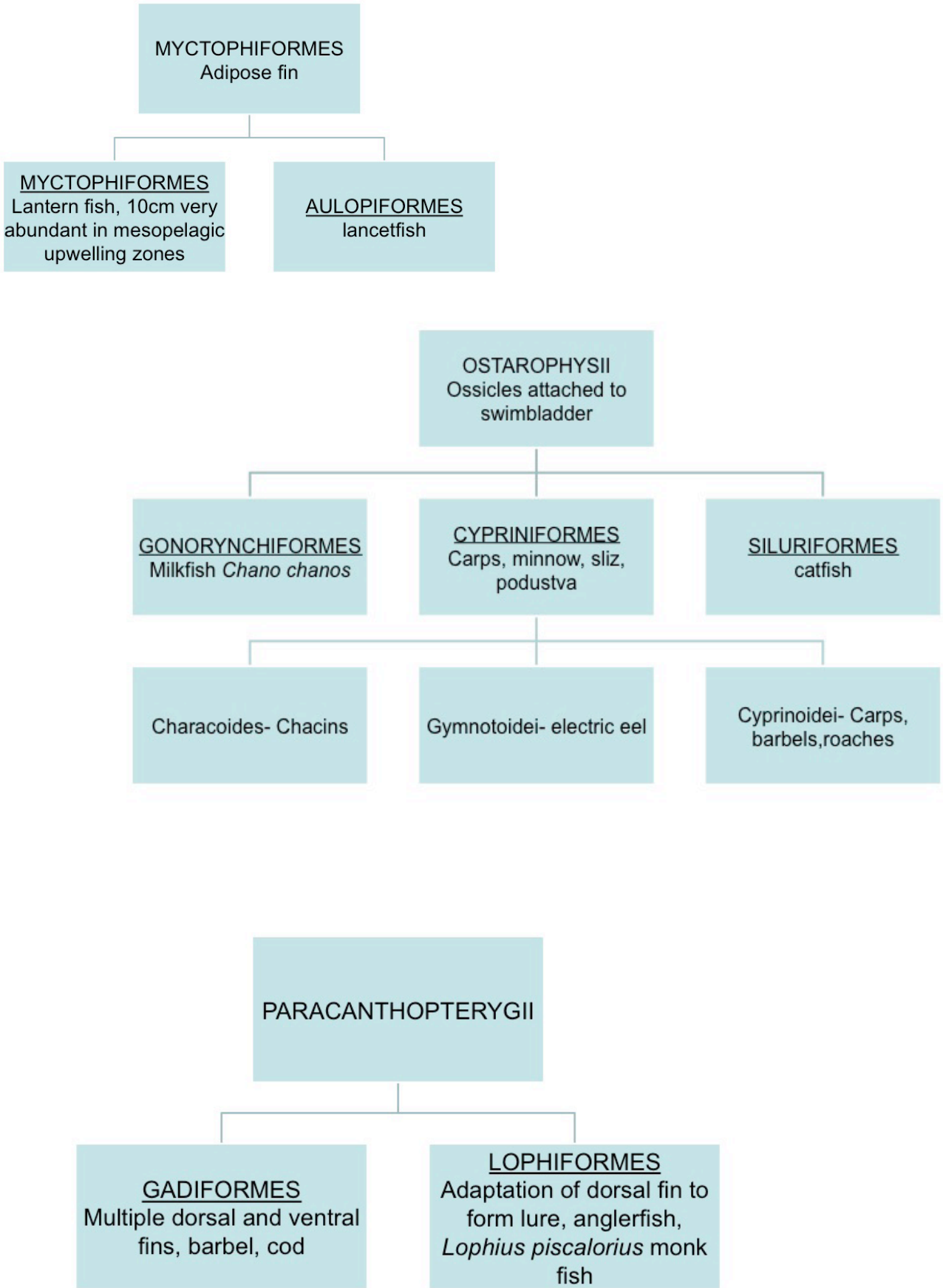


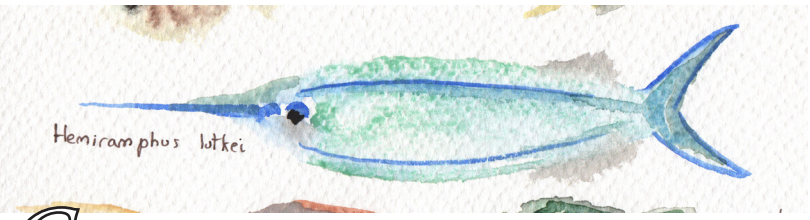
PROTOCANTHOPTERYGII

SALMONIFORMES
Adipose fin

- Salmonoidei – adipose
- Galaxioidei
- Esocoidei
- Argentinoidei
- Stomiatoidei
- Alepocephaloidei
- Myctophoidei

Baikal omul - Coregonus autumnalis migratorius


MYCTOPHIFORMES
Adipose fin
MYCTOPHIFORMES
Lantern fish, 10cm very abundant in mesopelagic upwelling zones
AULOPIFORMES
lancetfish
OSTAROPHYSII
Ossicles attached to swimbladder
GONORYNCHIFORMES
Milkfish Chano chanos
CYPRINIFORMES
Carps, minnow, sliz, podustva
SILURIFORMES
catfish
Characoides- Chacins
Gymnotoidei- electric eel
Cyprinoidei- Carps, barbels,roaches
PARACANTHOPTERYGII
GADIFORMES
Multiple dorsal and ventral fins, barbel, cod
LOPHIFORMES
Adaptation of dorsal fin to form lure, anglerfish, Lophius piscalorius monk fish



Aulostomus chinensis

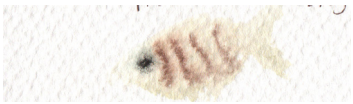
ACANTHOPTERGII
Spiny-rayed, Paired fins forward, Protrusible jaw, mostly marine

ANTHERINIFORMES Flying fish, sandsmelt, garfish	CYPRINODONTIFORMES- tropical m+f Toothcarps, gubby
BERYCIFORMES- m, deep water or coral	ZEIFORMES- m, deep water, john dory
LAMPRIDIFORMES- m, oarfish	GASTEROSTEIFORMES Stickleback, seahorse, pipefish
SYNGNATHIFORMES, m, Seahorse, Parental care reversal	SYNBRANCHIFORMES- f, tropical, swamp eels
SCORPAENIFORMES Gurnards, scorpion fish, Cotus gobio#	DACTYLOPTERIFORMES, m, tropical, flying gurnards
PEGASIFORMES, m, tropical	PLEURONECTIFORMES,m, Flatfish, flounder, turbot
TETRAODONTIFORMES, m, tropical, puffers, sunfish(Mola)	BELONIFORMES – needlefish
PERCIFORMES	

Arothron manilensis

Guam

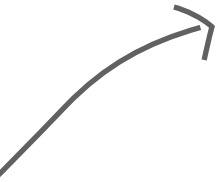
Trigger fish - Rhinecanthus aculeatus



Guam

Guam

Guam



- PERCIFORMES
  - SUBORDER PERCOIDEI
    Perch, cardinal, jack, remora, sea bass,
  - SUBORDER MUGILOIDEI
    mullets

  - SUBORDER LAMBROIDEI
    Wrasse(Lambridae), cichlids(Cichlidae),damselfish(Pomacentridae), surfperches(Embiotocidae)
  - SUBORDER BLENNIODEI
    blennies
  - SUBORDER GOBIODEI
    gobies
  - SUBORDER SCOMBRODEI
    Mackerel, tuna, swordfish
  - SUBORDER ANABANTOIDEI gouramis, labyrinth
  - TRACHINOIDEA Sandeels, weever

Guam

Guam

1. REPTILES

Class REPTILA, scaly skin, internal fertilisation, shelled eggs

1. Order Chelonia
turtles

2. Order Crocodylia
Crocodiles and alligators

3. Order Rhynchocephalia
tuatara

4. Order Squamata
- Lacertilia
lizards
- Ophidia
Snakes

4. Order Squamata
Lacertilia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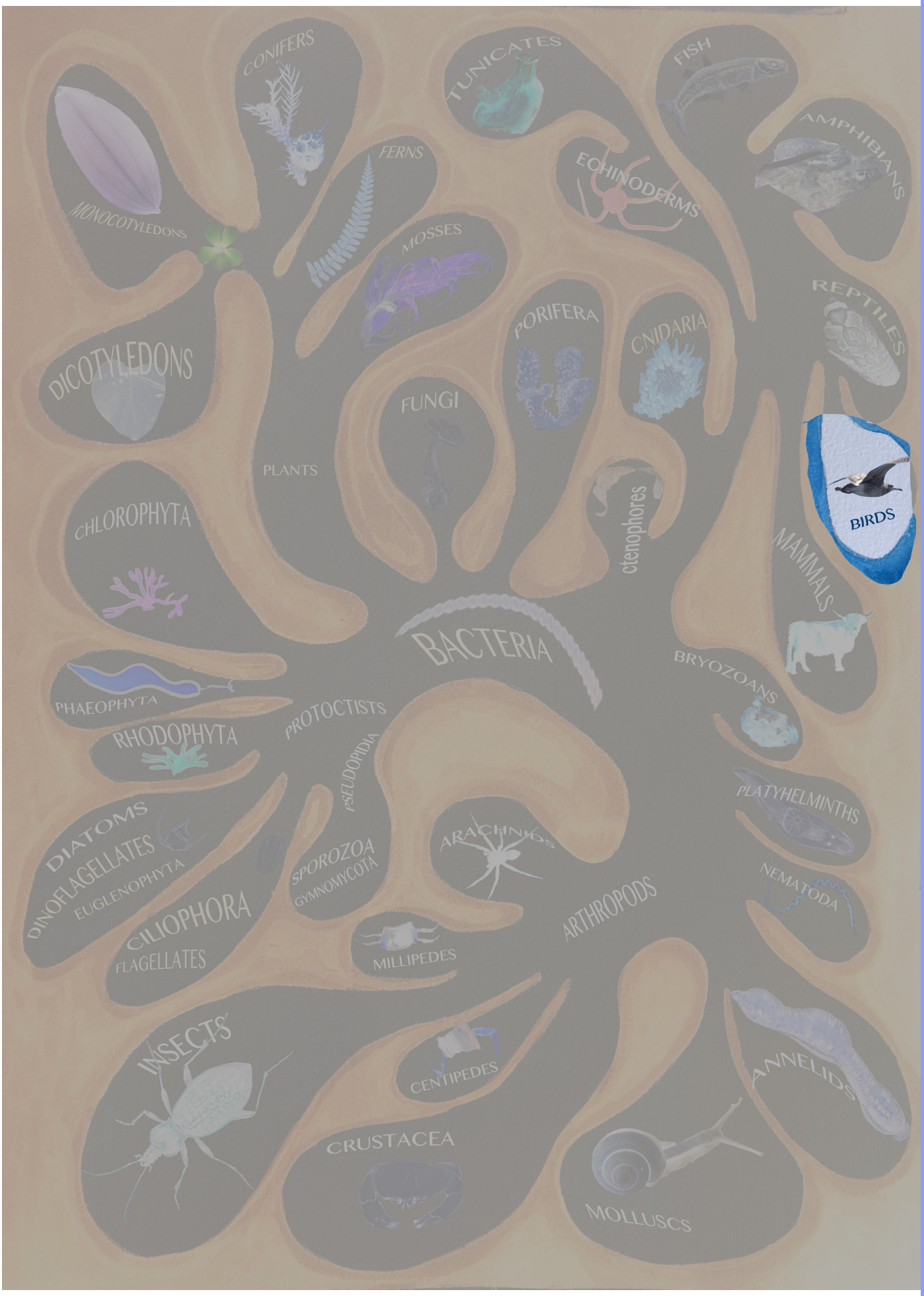
MILLIPEDES
INSECTS
CENTIPEDES
ANNELIDS
CRUSTACEA
MOLLUSCS


Guam


Guam


Russia - Baikal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t. ANNELIDS

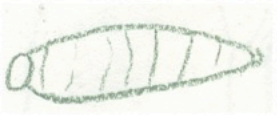
Annelida- spaceous coelom
'a ring'

1 Polychaeta- many chitinous bristles called Chaetae, fleshy parapodia, ragworm

Clitellata

2 Oligochaeta- no parapodia, few bristles earthworm

Hirudinea suckers 3

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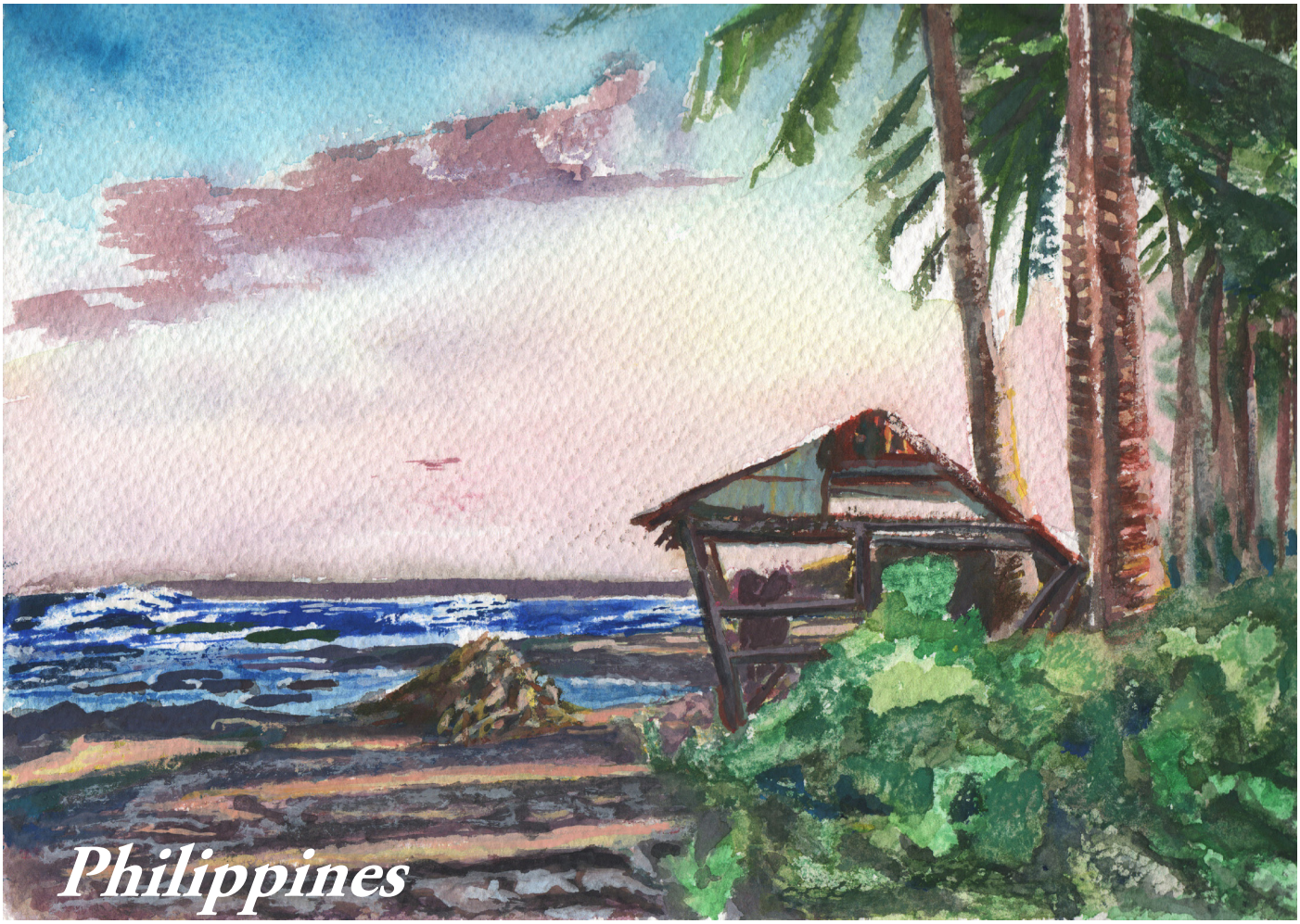
u. MOLLUSCS

1. Monoplacophora (Ancient Mollusks)
2. Aplacophora (Worm Mollusks)
3. Polyplacophora (Chitons)
4. Gastropoda (Snails And Slugs)
5. Bivalvia (Clams, Oysters, Scallops)
6. Scaphopoda (Tooth Shells)
7. Cephalopoda (Cuttlefish, Squid, Octopus)



Siargao
eastern shore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4. GASTROPODA

MAIN JEJU FAMILIES (FAMILIES IN THIS BOOK)

PROSOBRANCHIA

4a. ARCHAEOGASTROPODA

4b. MESOGASTOPODA

4 c. NEOGASTROPODA

- MURICIDAE
- BUCCINIDAE
- COLUMBELLIDAE
- NASSARIIDAE
- OLIVIDAE
- TURRIDAE
- CONIDAE
- TEREBRIDAE
- PYRAMIDELLIDAE

4 d. OPISTHOBRANCHIA

4 e. PULMONATA

• MURICIDAE

• CONIDAE

5 BIVALVIA

MAIN JEJU FAMILIES (FAMILIES IN THIS BOOK)

a. PROTOBRANCHIA
b. PTERIOMORPHIA
c. HETERODONTA
- CHAMIDAE
- UNGULINIDAE
- GALEOMMATIDAE
- CARDITIDAE
- CARDIIDAE
- MACTRIDAE
- MESODESMATIDAE
- SOLENIDAE
- TELLINIDAE
- PSAMMOBIIDAE
- VENERIDAE

d. ANOMALODESMATA
- MYOCHAMIDAE
- HIATELLIDAE

- CARDIIDAE

Philippines

Guam

v. CRUSTACEA

3 - CRUSTACEA

1 Cephalocarida

2 Remipedia Cave swimmers

3 Branchiura

4 Cirripedia

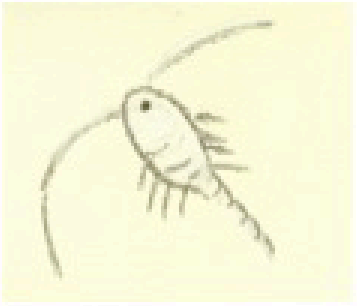
5 Malacostraca

6 Branciopoda Fairy shrimp

7 Mystacocarida

8 Copepoda

9 Ostracoda Seed shrimp



9 Class Ostracoda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5 Class Malacostraca

- Amphionidacea
- Amphipoda
- Bathynellaceae
- Cumaceae
- Decapoda
- Euphausiacea
- Isopoda
- Leptostraca
- Lophogastrida
- Mysida
- Stomatopoda
- Tanaidacea
- Thermosbaenacea

Order Decapota

Philippines - Siargao

Philippines - Cloud 9

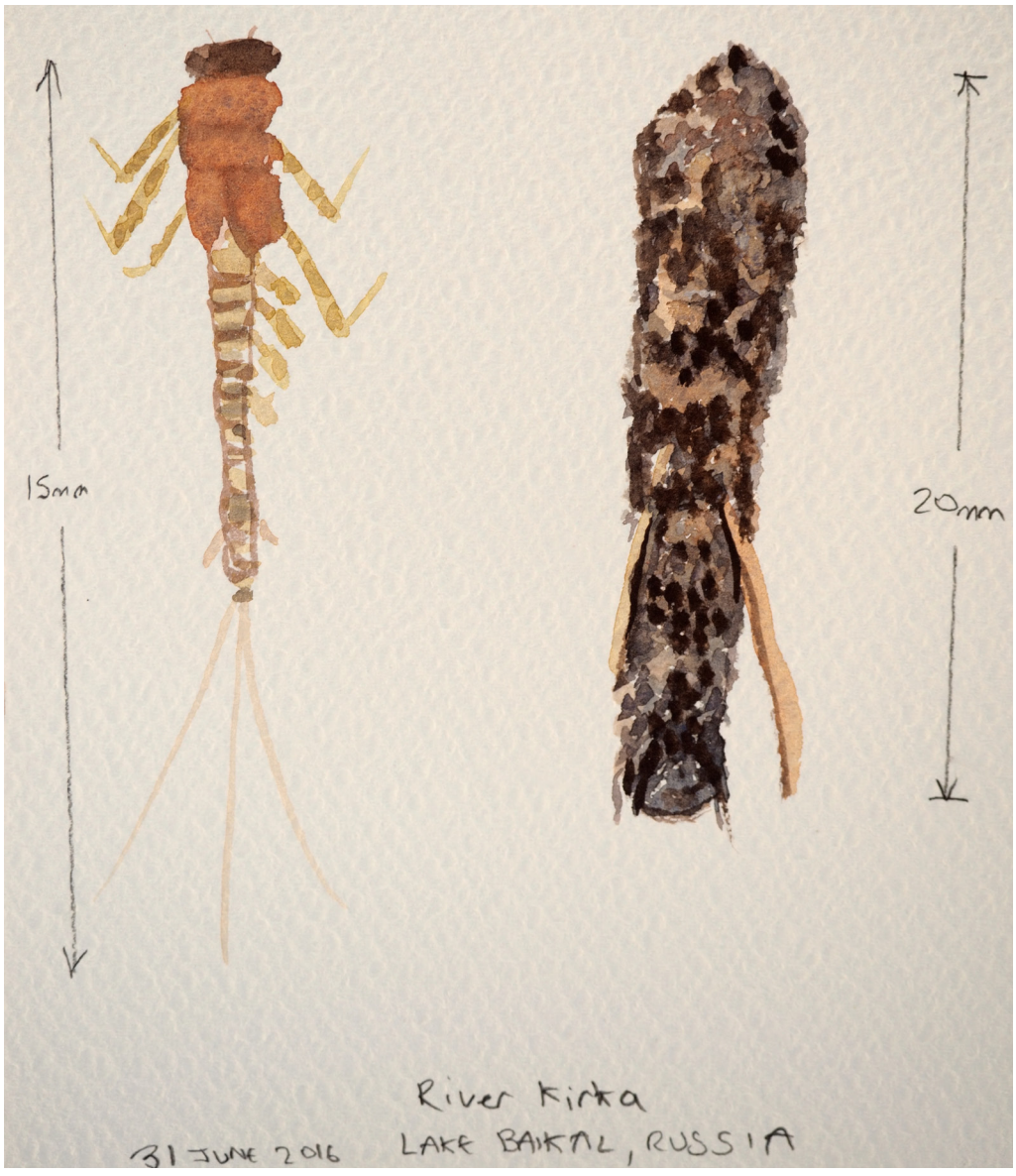
B PTERYGOTA

- i) Series PALEOPTERA — Ancient winged
- i i) Series NEOPTERA — Modern/folded wing

PALEOPTERA

- Order EPHEMEROPTERA — mayflies
- Order ODONATA — dragonflies

Russia

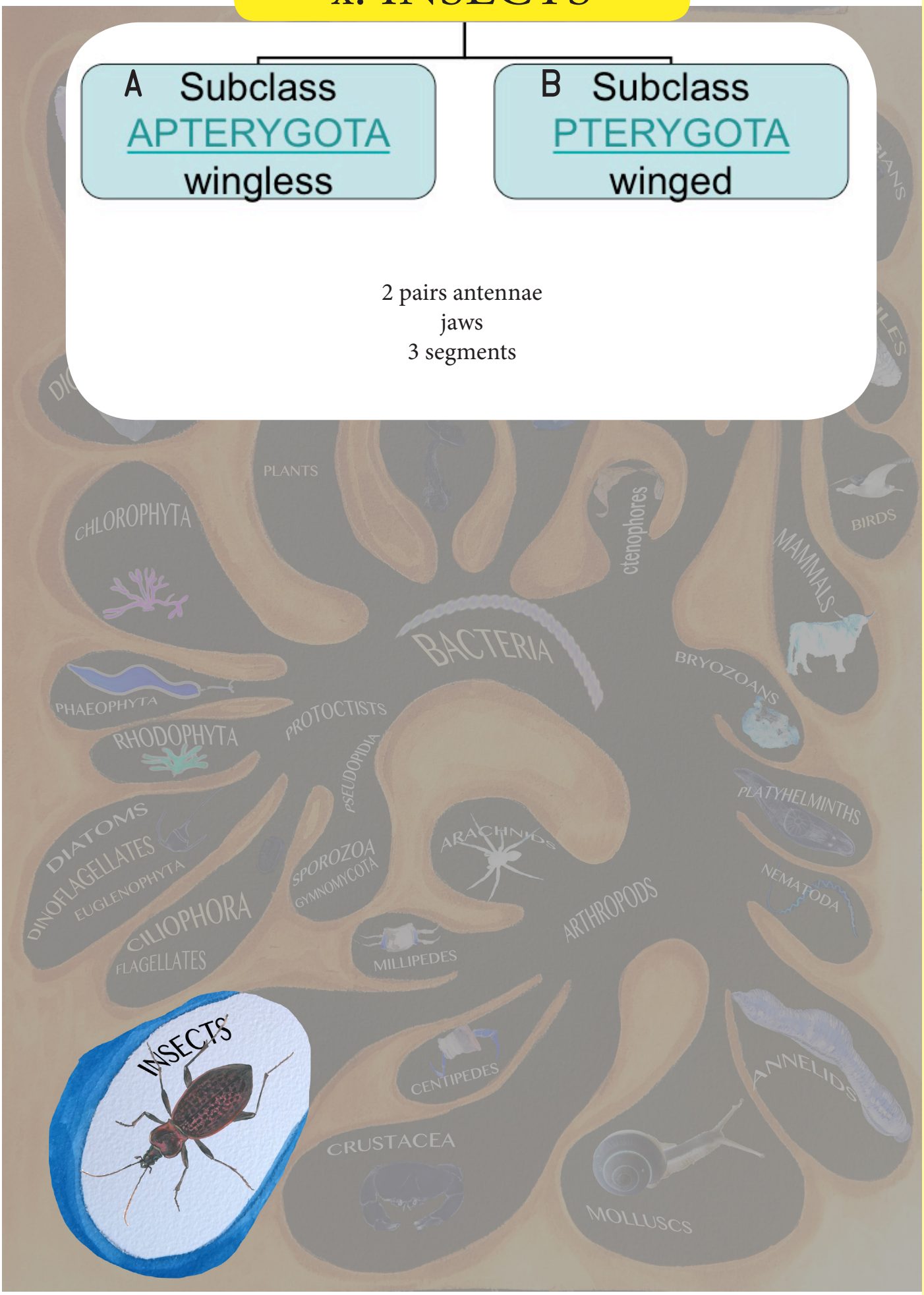


x. INSECTS

A Subclass APTERYGOTA — wingless

B Subclass PTERYGOTA — winged

2 pairs antennae
jaws
3 segments



Bii) Series Neoptera
modern and folded wing insects

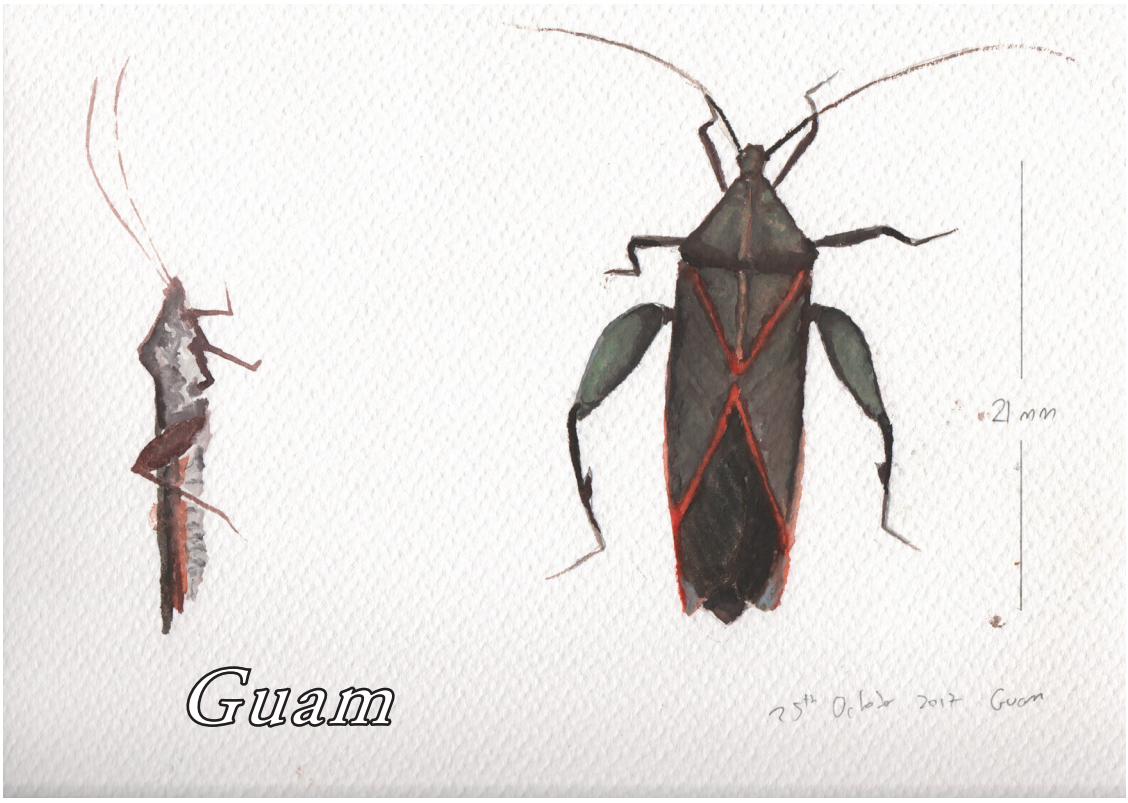
a	CURSORIA	ISOPTERA	l
b	ORTHOPTERA	DERMAPTERA	m
c	EMBIOPTERA	PLECOPTERA	n
d	ZORAPTERA	CORRODENTIA	o
e	PHTHIRAPTERA	THYSANOPTERA	p
f	HEMIPTERA	MEGALOPTERA	q
g	NEUROPTERA	RAPHIDIODEA	r
h	HYMENOPTERA	COLEOPTERA	s
i	MECOPTERA	TRICHOPTERA	t
j	LEPIDOPTERA	DIPTERA	u
k	SIPHONAPTERA		

b - Order Orthoptera
grasshoppers crickets

Family Gryllotalpidae - 25mm,digging legs, mole cricket
Family Tridactylidae - 5mm, short antennae
Family Tetrigidae - 15mm, have a pronotum that covers back
Family Locustidae - grasshopper, locusts, tarsl (antennae 3rd part) has 4 segments.
Family Tettigoniidae -long-horned grasshoppers
Family Gryllidae - crickets, long antennae, but tarsl has 3 segments

f - Order Hemiptera - bugs
piercing mouth parts, gradual metamorphosis, usually winged (2) pairs, base of front wing hard (hemelytron)

FAMILIES
Corixidae - waterboatman
Notonectidae - backswimmers
Belostomatidae -giant water bugs
Gerridae -water skaters
Reduviidae -assasin bugs
Cimicidae - bed bugs
Miridae -plant bugs
Lygaeidae -4 segmented beak
Coreidae -squash bugs, veins
Aradidae -flat bugs, 2 segment tarsi
Tingidae - lace bugs
Pentatomidae - stink bugs
Pyrrhororidae - fire bugs, tarsi 3 segments

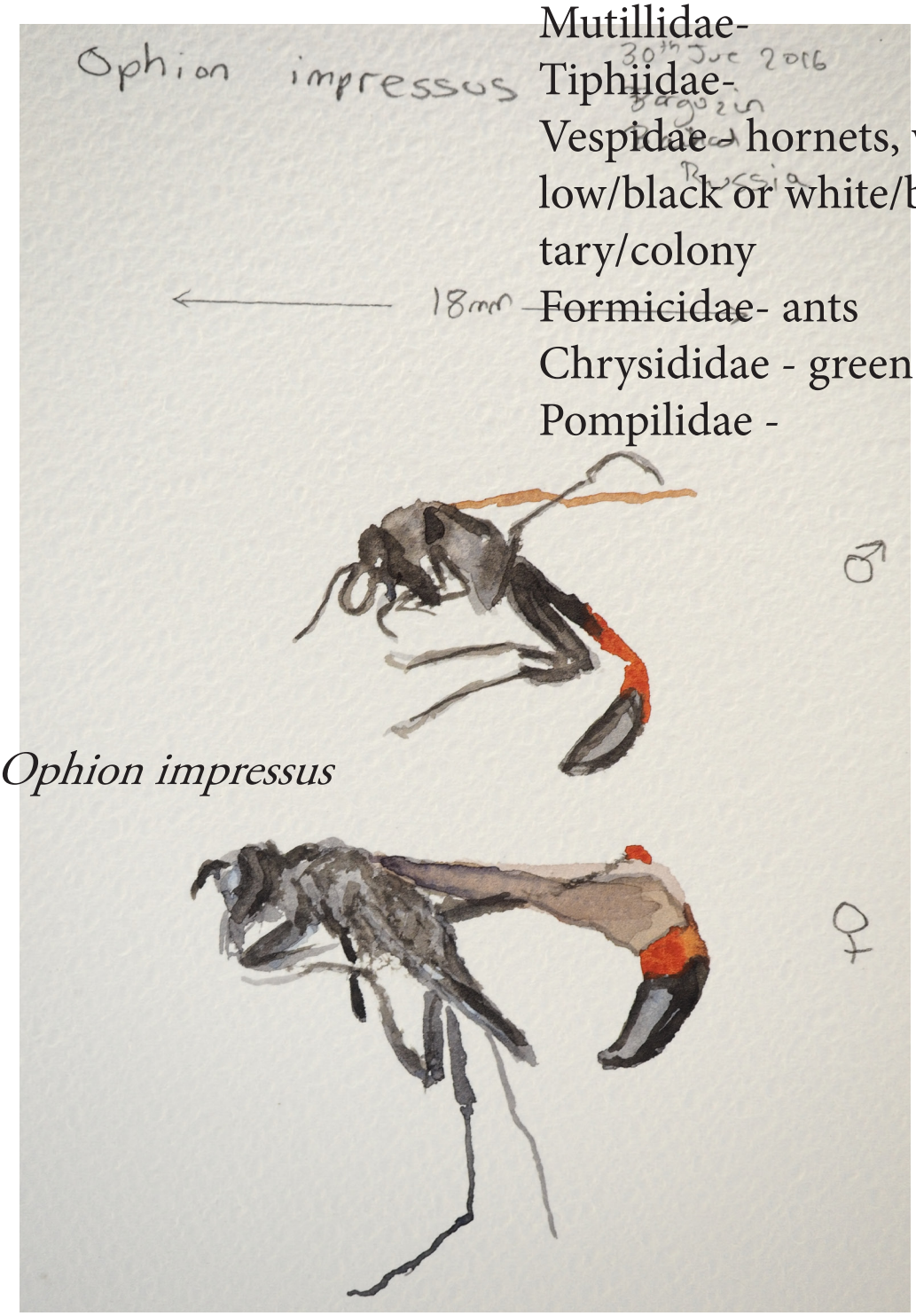


g - Order Neuroptera
lacewings, mantispids

h - Order Hymenoptera

Suborder Symphyta
no waist, sawfies and horntails, plant feeding, larvae have distinct head

Suborder Apocrita
narrow waist, larvae parasites or fed by adults or plant galls and all legless
Ichneumonidae - eggs inside other larvae
Braconidae - smaller
Chalcidoidea - small wasps
Cynipoidea - small, gall wasps
Scollidae - digger wasps, black or black&yellow banded, eggs laid on Scarabeidae larvae
Mutillidae-
Tiphiidae-
Vespidae - hornets, wasps, 10-30mm, yellow/black or white/black markings, solitary/colony
Formicidae- ants
Chrysididae - green wasps
Pompilidae -



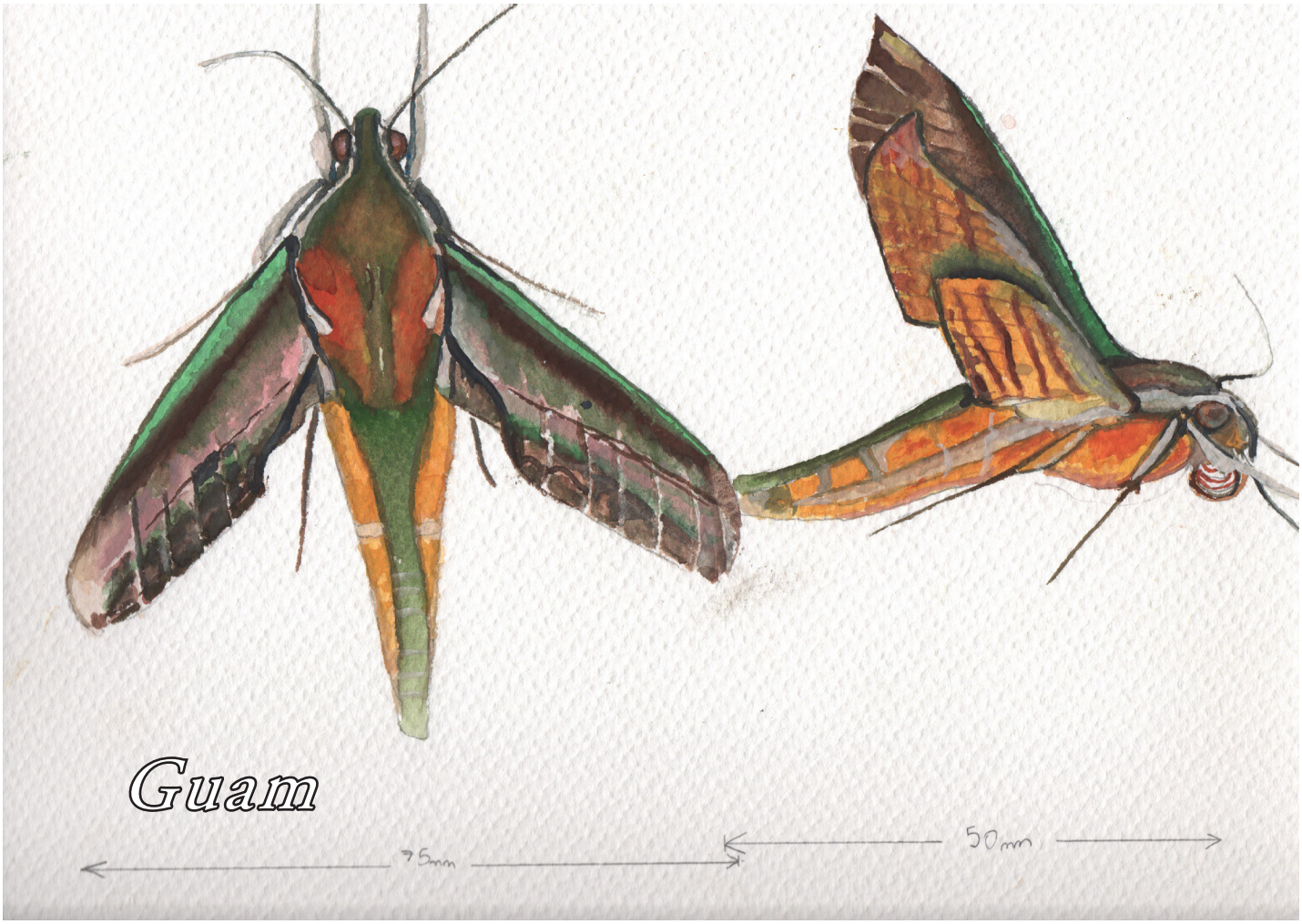
Ophion impressus

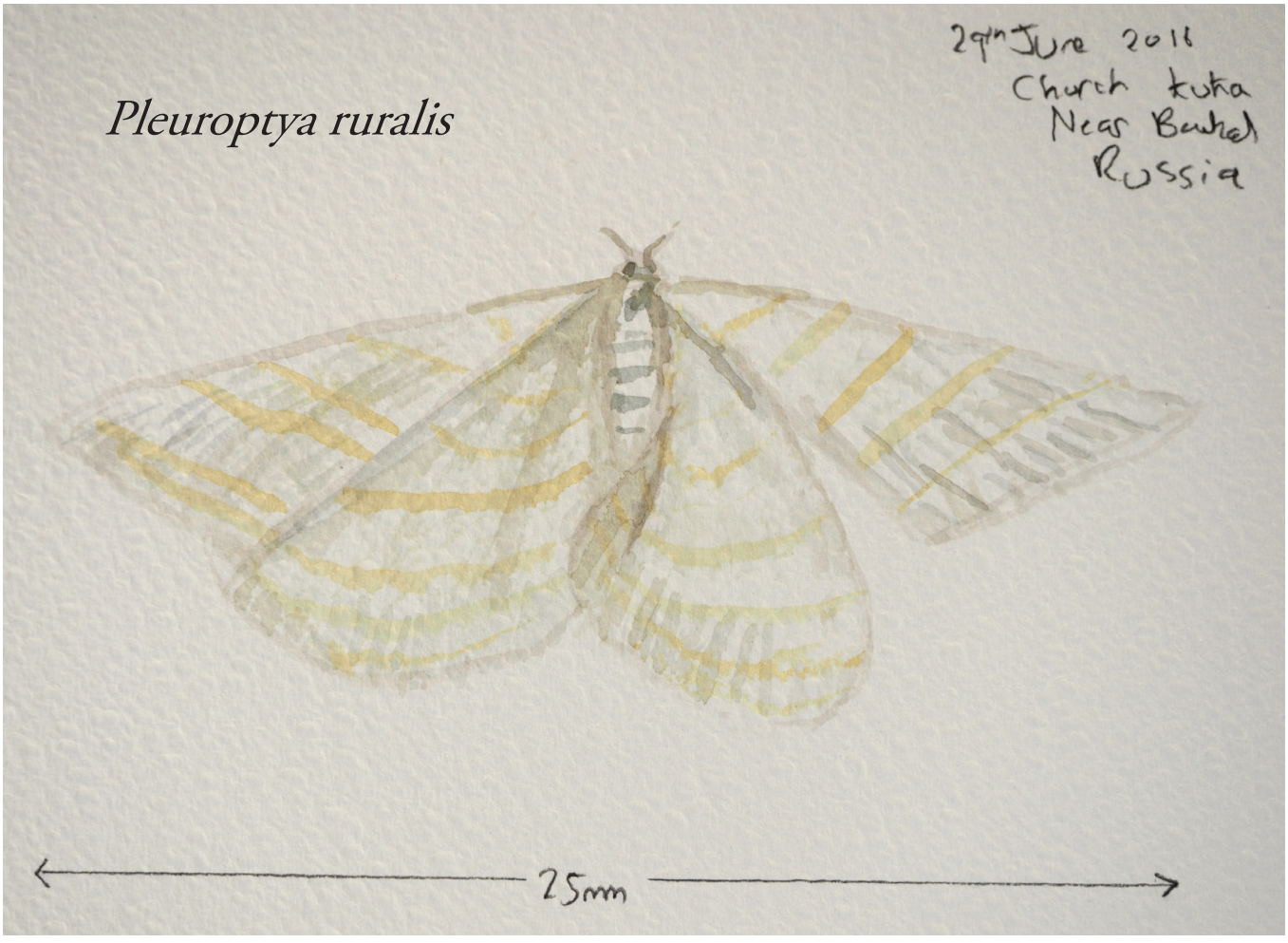
Russia

j - Order Lepidoptera

Suborder Jugatae

SuborderFrenatae
Tineidae - clubmoths
Psychidae
Gelechiidae
Aegeriidae - clear wings
Tortricidae
Pyralidae
Lasiocampidae
Sphingidae -hawk moths
Geometridae
Satuniidae - silworm moths
Liparidae
Phalaenidae
Arctiidae - actual moths


Guam
75mm
50mm

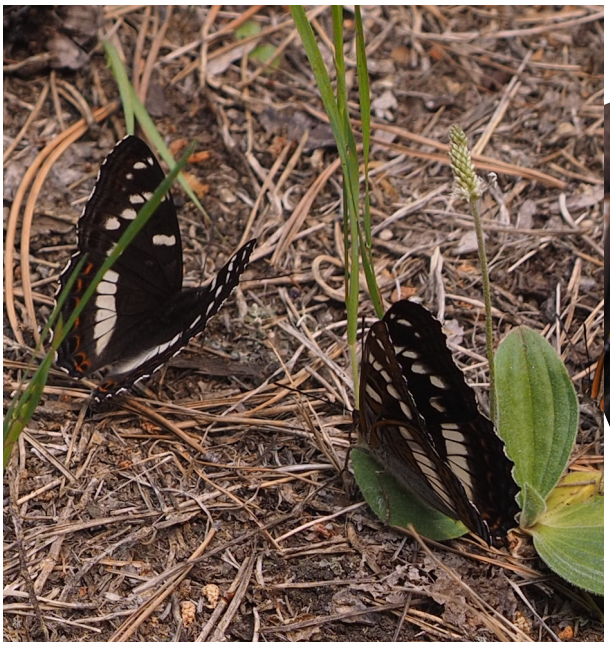

Pleuroptya ruralis
24th June 2016
Church kuka
Near Baikal
Russia
25mm

maybe - Diacrisia sannio

Goneptyrx rhamni

Russia

Suborder Rhopalocera -
butterflies
Skippers (fly straight like wasps)



Scolitantides orion

Russia


2nd July 2016
Barguzin forest
Baikal
Russia


2nd July 2016
Barguzin forest
Baikal
Russia
similar to Neptis rivularis
Width: 52mm


Russia
Aporia crataegi
Wingspan = 64mm
2nd July 2016 Barguzin Forest, Baikal Lake, Russia


Russia
Aporia crataegi
30mm

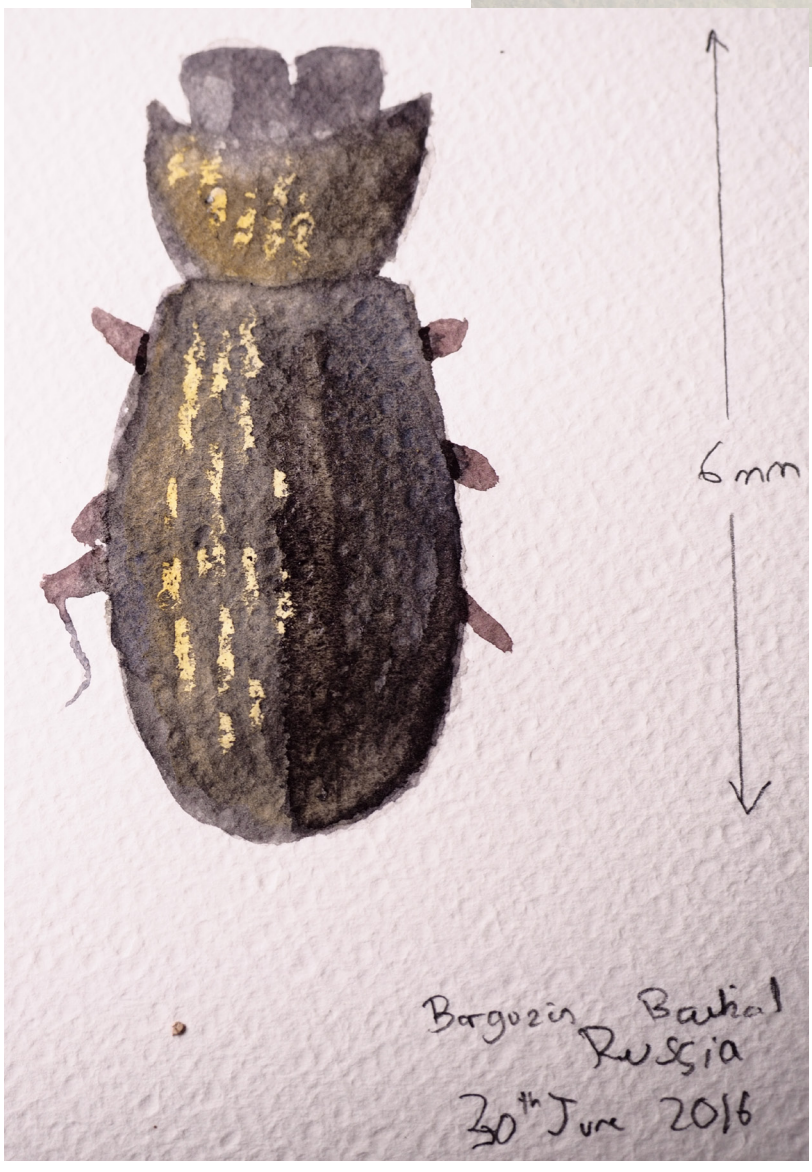
S ORDER COLEOPTERA

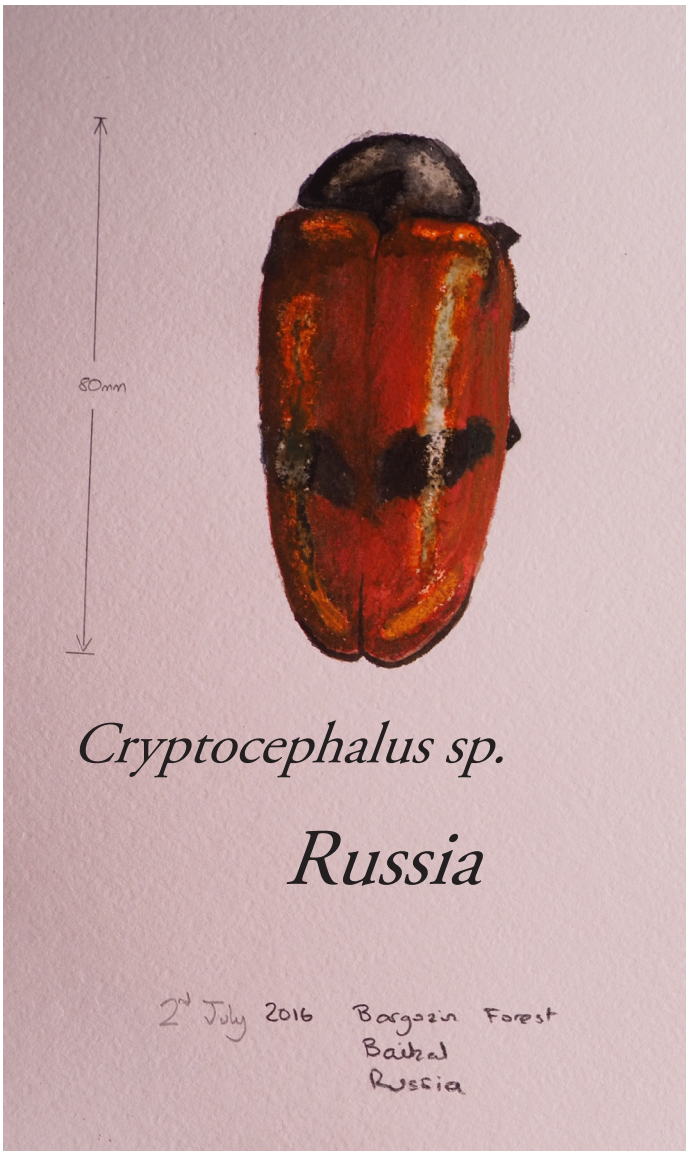
1 Family Carabidae - ground beetles, long elytra
2 Family Gyrisidae - whirligig beetles, aquatic
3 Family Cicindelidae
4 Family Haliplidae
5 Family Dytisidae

6 Family Staphylinidae - rove beetles
7 Family Lampyridae - fireflies
8 Family Elateridae - click beetle, can turn over if displaced
9 Family Buprestidae - metallic or flatheaded wood borers
10 Family Dermestidae - dryopid beetles
11 Family Coccinellidae - ladybirds
12 Family Meloidiae - blister beetles
13 Family Tenebrionidae - darkling beetle
14 Family Scarabeidae -
15 Family Chrysomelidae - leaf beetle
16 Family Cerambycidae - longhorn
17 Family Bruchidae - bean pea weevils
18 Family Curculionidae - typical weeevil
19 Family Sco;ytidae - dark beetles
20 Family Stylopidae - parasites on bees wasps
21 Family Lucanidae - stag beetles
22 Family Mengeidae - parasites on silverfish

Russia


11mm
Russia
Leptura annularis
Yerofey Pavlovich
24th July 2016

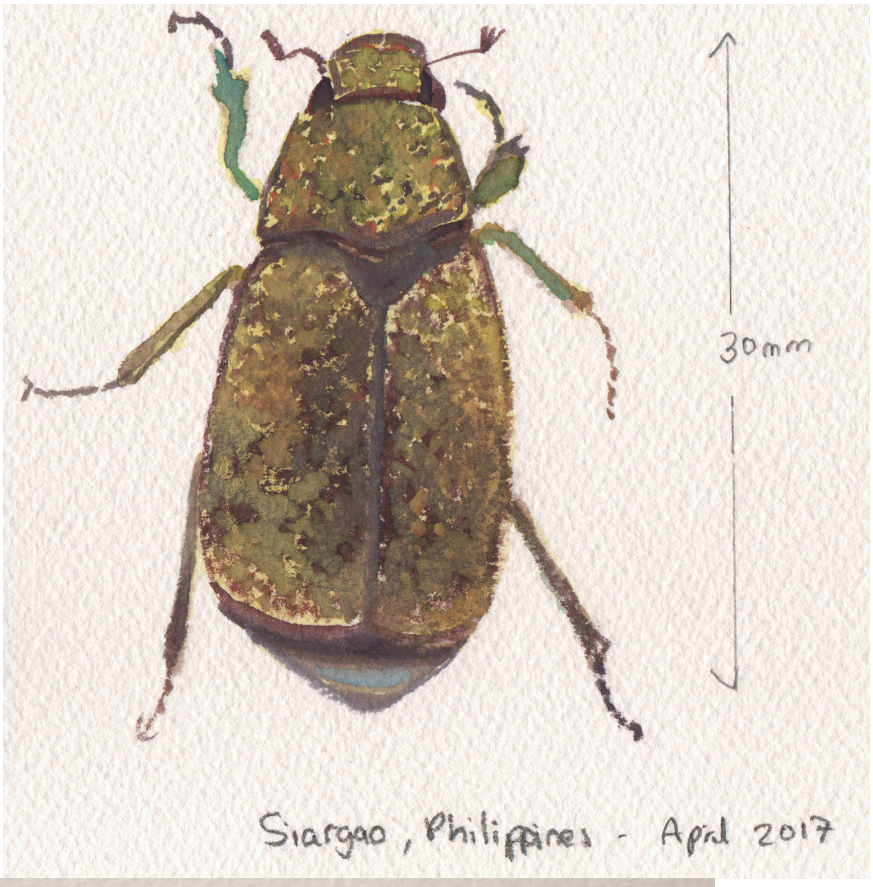

6mm
Bargozin Baikal Russia
30th June 2016


8mm
Cryptocephalus sp.
Russia
2nd July 2016 Bargazin Forest
Baikal
Russia


Chrysomela tremulae
8mm
29th Jun 2016
Yerofey
Pavlovich, Russia

Russia

Philippines



16 - Family Cerambycidae -longhorn

21 Family Lucanidae

z. ARACHNIDS

- 1 CHELICERATA — No jaws
  - MEROSTOMATA — Horseshoecrabs, gills
  - ARACHNIDA — 'a spider', Tracheae
  - PYCNOGONIDA — seaspiders

- ARACHNIDA
  - ORDER SCORPIONIDA
  - ORDER PEDIPALPI
  - ORDER PALPIGRADA
  - ORDER PSEUDOSCORPIONIDA (pseudoscorpion 7-8mm)
  - ORDER SOLPUGIDA
  - ORDER PHALANGIDA (daddy long legs)
  - ORDER ARANEAE (spiders)
  - ORDER ACARIA (mites/ticks)


CONIFERS
TUNICATES
FISH
AMPHIBIANS
MONOCOTYLEDONS
FERNS
ECHINODERMS
MOSSES
REPTILES
PORIFERA
CNIDARIA
DICOTYLEDONS
FUNGI
PLANTS
BIRDS
CHLOROPHYTA
ctenophores
MAMMALS
BACTERIA
BRYOZOANS
PHAEOPHYTA
PROTOCTISTS
RHODOPHYTA
PSEUDOPODIA
PLATYHELMINTHS
DIATOMS
DINOFLAGELLATES
EUGLENOPHYTA
ARACHNIDS
SPOROZOA
GYMNOMYCOTA
NEMATODA
CILIOPHORA
FLAGELLATES
ARTHROPODS
MILLIPEDES
INSECTS
CENTIPEDES
ANNELIDS
CRUSTACEA
MOLLUSCS

BIBLIOGRAPHY

Natural History Museum Novosibirsk