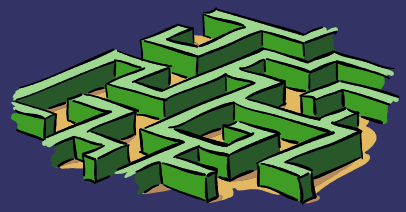
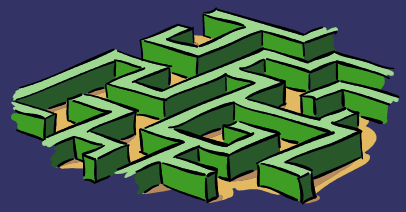
Digitisation of the South African Diatom Collection

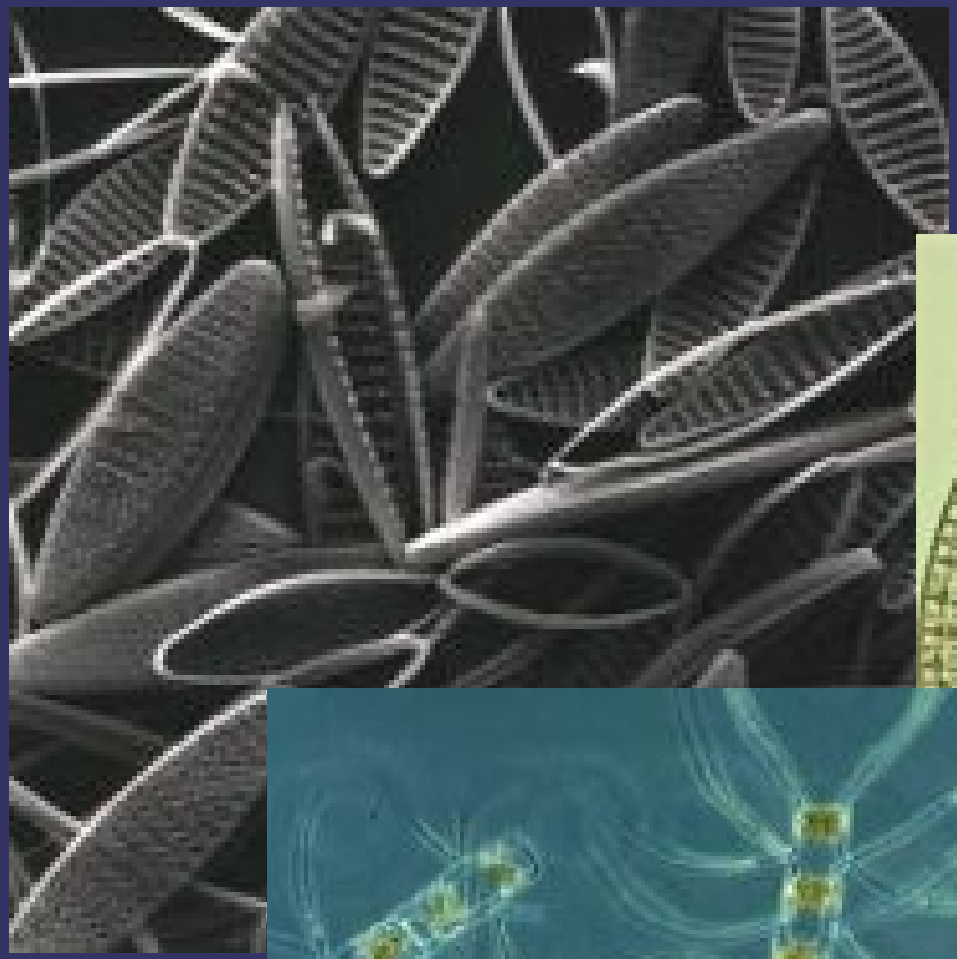
Johan van der Molen, CSIR

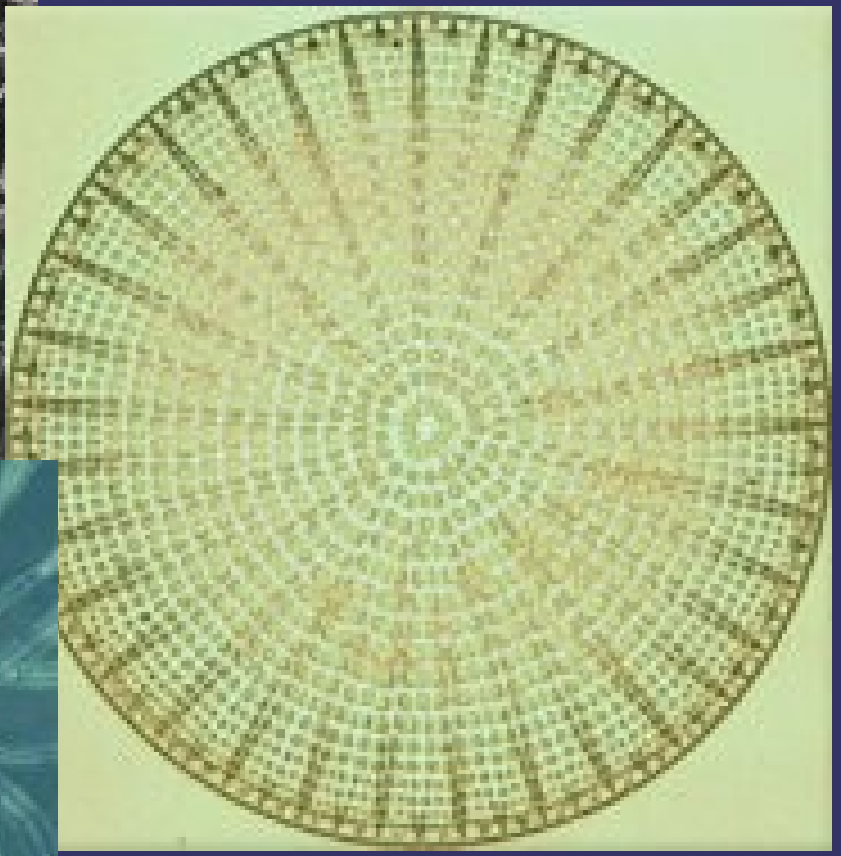


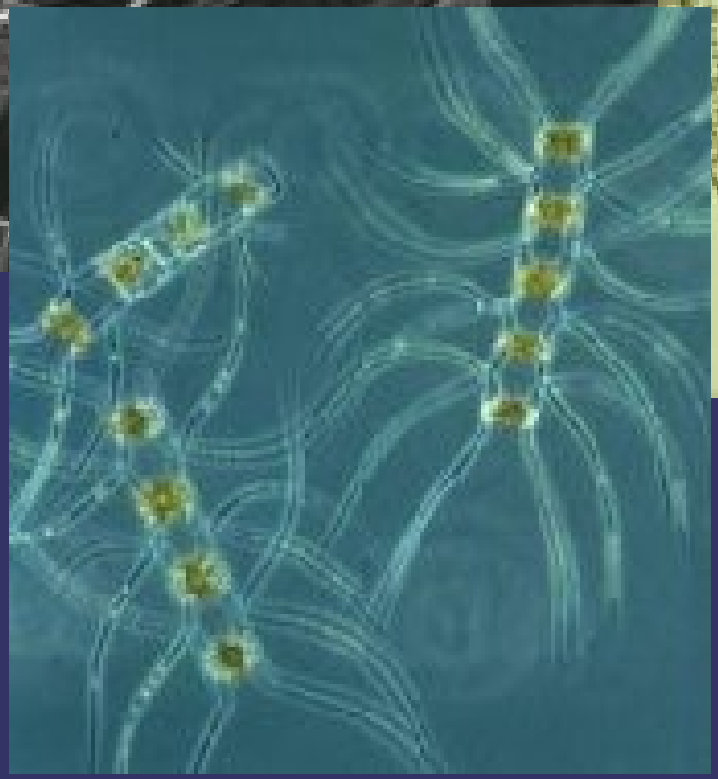
Background

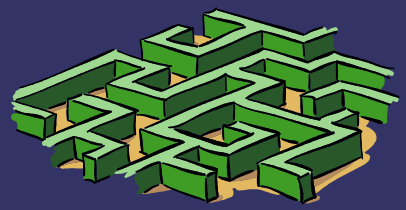
- Since 1950
- Properly curated
- In dis-use since ~1990
- Renewed interest since ~2004
- Water bodies in Southern Africa, mostly rivers
- Supports taxonomic work and biological monitoring, climate change research





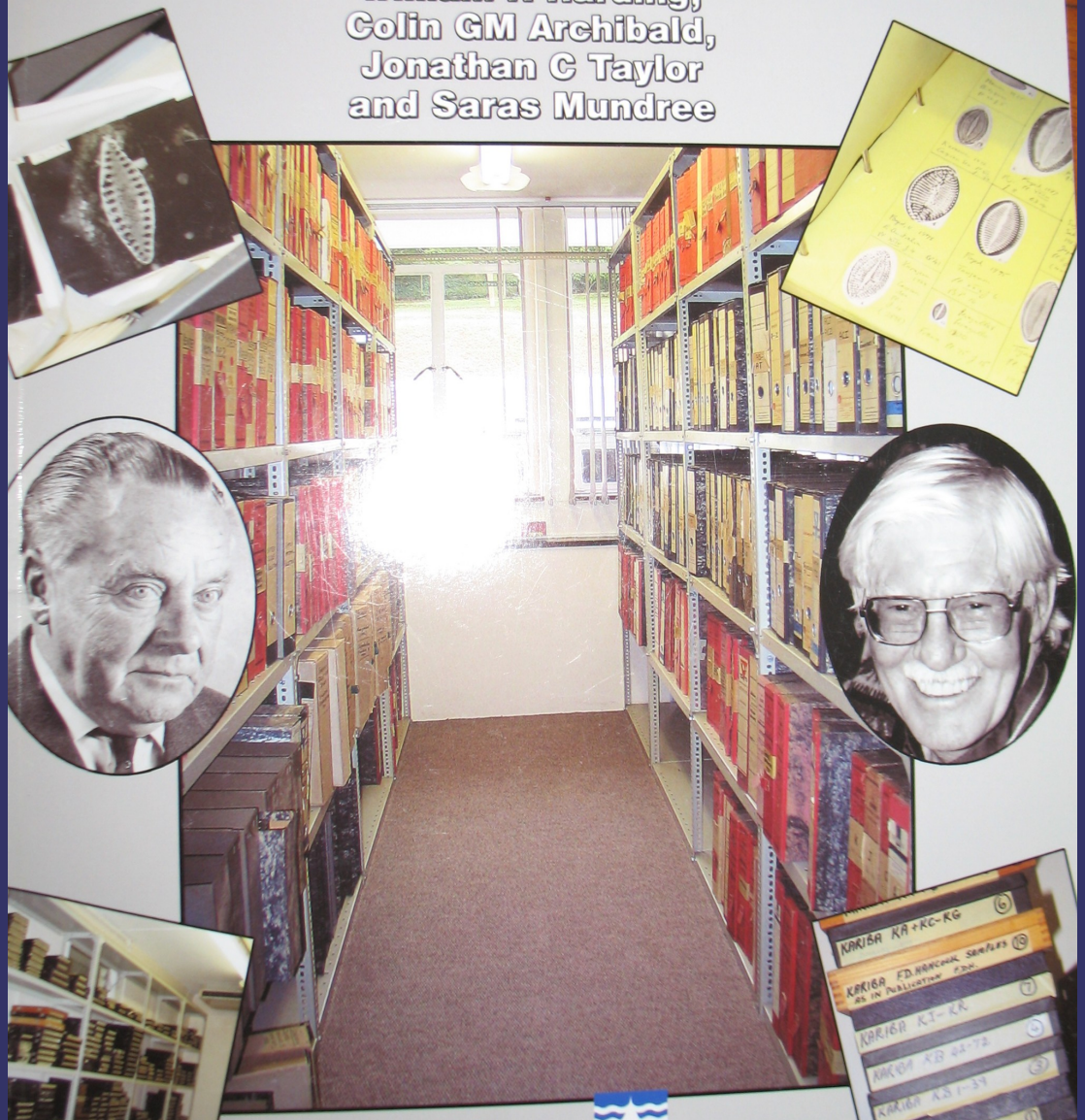






The South African Diatom Collection: An Appraisal and Overview of Needs and Opportunities

William R Harding,
Colin GM Archibald,
Jonathan C Taylor
and Saras Mundree

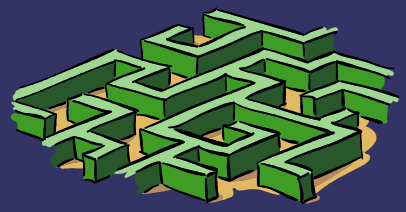


TT 242/04

Water Research Commission

Main Components

- Sample bottles
- Microscope slides
- Analyses sheets
- Literature (books & papers)
- Maps
- TEM glass plates

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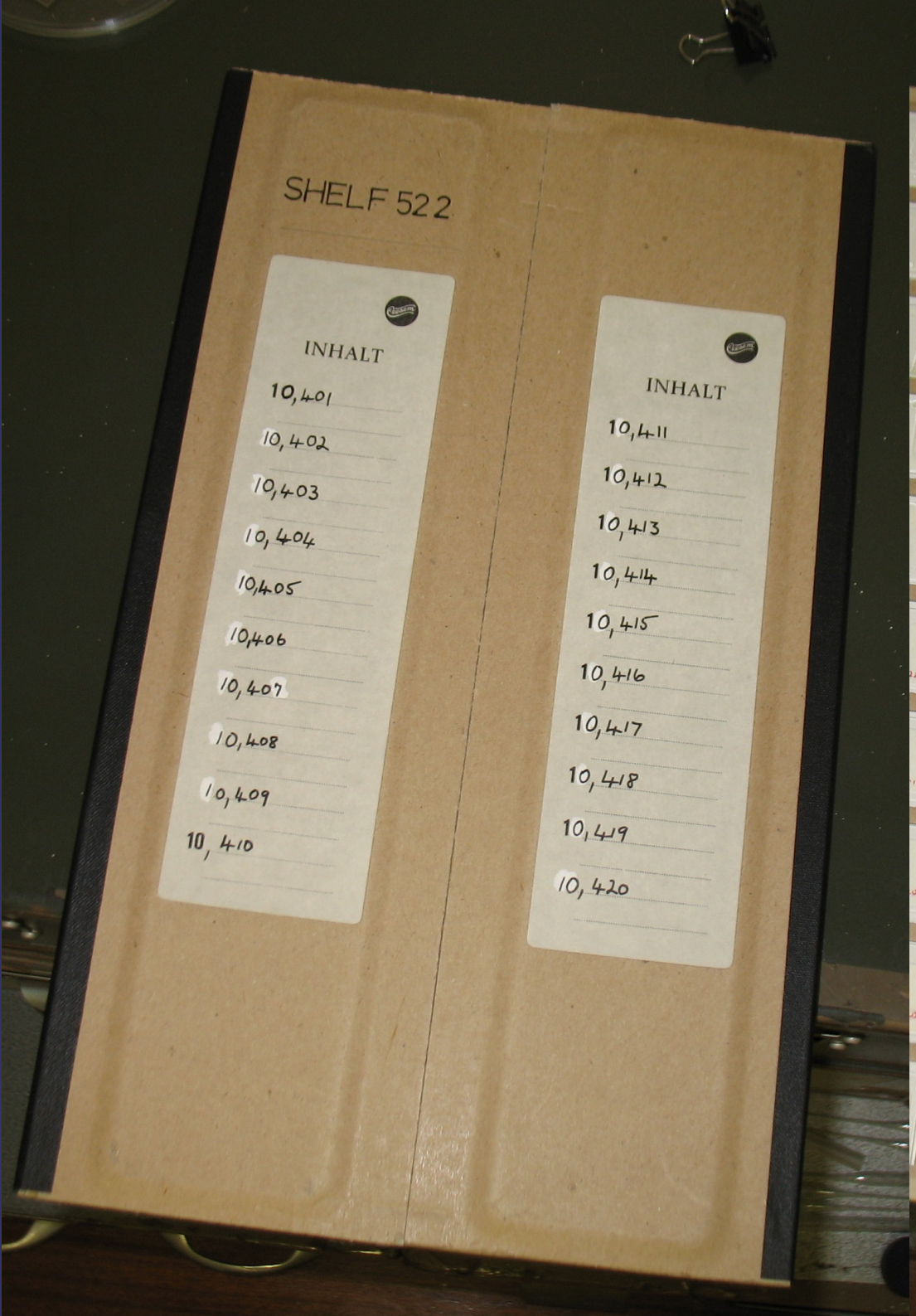
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EL 6 23.1.1961.	Maiden Dam Stausee nördlich King Williams Town. Epiphyten höherer Pflanzen und Bodenüberzüge am unteren Ende des Dammes.
1. Navicula tenella Brébisson	α 29 β 5 σ 14
2. Achnanthes microcephala (Kg.) Grun.	α 10·5 β 2·5
3. Synedra ulna (Nitzsch) E.	α 200 β σ 9
4. Tabellaria flocculosa (Roth) Kg.	α 17·5 β 8
5. Cymbella ventricosa Kg	α 26·5 β 5 σ 14
6. Anomoeoneis exilis (Kg.) Cleve	α 21·5 β 4·5
7. Cymbella microcephala Grunow	α 20·5 β 4·5 σ 24


DIATOMS
LETTERS


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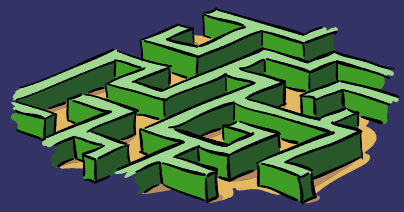
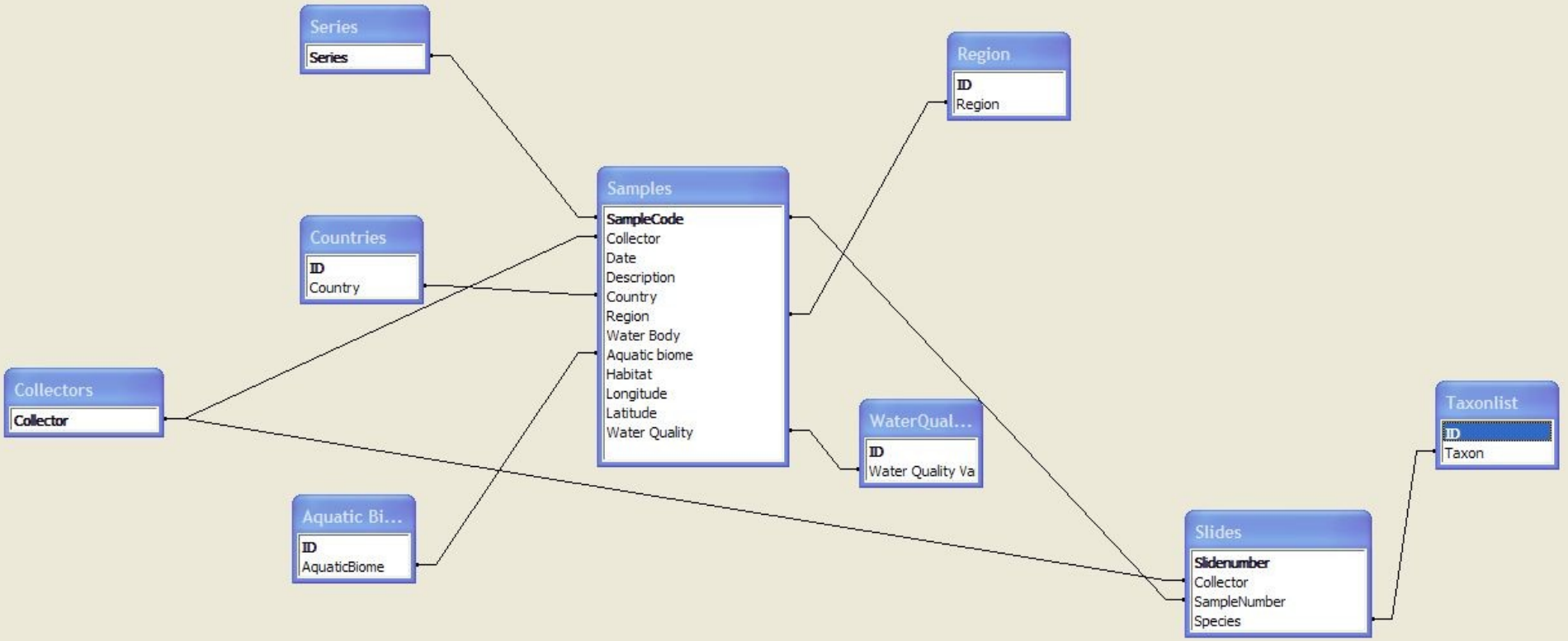
Digitisation Phase 1

- Catalogue of bottle collection in database
- Catalogue of slide collection in database
- Scan in Analysis sheets and link to slides (in part)
- Import literature reference data

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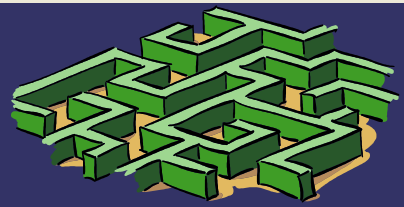
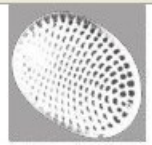


CSIR DIATOM DATABASE

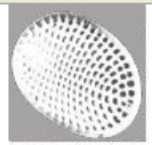

LOGIN

CSIR Diatom Database

The CSIR Diatom Database houses data and meta-data for the national Diatom collection. The CSIR Diatom Database is housed at, and maintained by, by CSIR. Funding to digitise the collection's hand-written data was provided by SANBI.

Access to the database is restricted, and you will need to login to gain access. For more information, please visit the CSIR's NRE's Coastal & Marine Pollution website, or contact Johan van der Molen.

CSIR DIATOM DATABASE


HOME SAMPLES SLIDES PUBLICATIONS LOOKUP LISTS DARWIN USERS REPORTS SEARCH LOGOUT

Welcome!

Welcome Johan van der Molen; according to the database, you are registered as "**johan**" with *super* rights. Click here to edit your profile.

You're logged in now, and can run reports, and/or start working with the database.

Update

General Comment New

5 June 13:30

- "Ebenda" is Germand means: same location as. In future please copy the site description from the indicated sample and make a note in both samples that they are linked (from the same location).

Vasha New

5 June 13:30

please add region Connecticut and change this in sample DC3-8

please correct: sample ET024 and ET025, ET 24 is missing and ET25 has bottle number ET24.

please correct: CHC001 change number to CH001; CHC002 change number to CH002; CHC003 change number to CH003

please correct: G0010 INTO G010 AND G0011 INTO G011

02-07-2008

please check: BHG44-BHG47, drawers do not make sense

Catherine New

09-06-2008 13:55

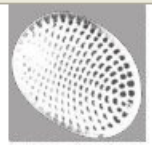
The Hartley series (HART) but on the datasheets its just H001 so I entered HART001 for bottle and site code

Thanks, Site codes are perfect, but could you please stick to the original bottle codes. I know it is confusing, but we want to use the site code to link to the slides later on and the bottle codes to find the bottles in the drawers.

Formalin preservation is not on the list under medium preparation

PLease make a note of this to get back later. Derek would have to add to the list (this is not a proper lookup list like the others. He's away for a week or two. Put it in comments for now.

CSIR DIATOM DATABASE


Sample List

Sample List

<< Record 1 to 20 of 1916 > >> Search Add

Collection	Bottle	Drawer	Date	Collector	Site Description	Longitude	Latitude		
CSIR Diatoms	211	37	18/10/1983	Schoeman, F.R.	Grootmis near Kleinsee, south of Port Nolloth. Algal scrape from water trough.	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A004	1	21/06/1961	Agnew, J.D.	Shashe River	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A1	1	21/06/1961	Agnew, J.D.	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A10	1	23/08/1961	Loedolf, C.J.	Lusaka. Oxidation Pond. Plankton	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A11	1	25/08/1961	Loedolf, C.J.	S. Rhodesia. Marandella. 150 yards below final pond in effluent channel	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A12	1	22/08/1961	Loedolf, C.J.	Kafne River. Before Kitwe, below federal road bridge. Scrapings from Rock Pools? Copper Pollution	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A13	1	21/08/1961	Loedolf, C.J.	Ndola. N. Rhodesia. Tertiary pond effluent channel, scarpings of cement bottom	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A14	1	23/08/1961	Loedolf, C.J.	Kafne R. At Kafne bridge at Kafne. Off plants in backwash	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A15	1	21/08/1961	Loedolf, C.J.	Ndola. 100 yards below teriary pond outlet	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A16	1	23/08/1961	Loedolf, C.J.	Kafne +- 100 yards below sewage works in effluent channel	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A2	1	21/06/1961	Agnew, J.D.	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A3	1	21/06/1961	Agnew, J.D.	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A5	1	24/06/1961	Agnew, J.D.	Mazoe River (Diatom and other algae)	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A6	1	25/06/1961	Agnew, J.D.	Shire River at Mpatapanda Gorge (Green algae)	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A7	1	23/08/1961	Loedolf, C.J.	Kafne. Tertiary oxidation pond scrapings off wall	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A8	1	23/08/1961	Loedolf, C.J.	Kafne +- 300 yards below sewage works in effluent channel	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	A9	1	23/08/1961	Loedolf, C.J.	Kafne +- 200 yards below sewage works in effluent channel	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	BA003	1	19/07/1955	Cholnoky, B.J.	Kaap River under the birdge ***al Kaapmuiden	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit
CSIR Diatoms	BA004	1	19/07/1955	Cholnoky, B.J.	The first small river, under the road bridge on the road to Carolina from Barberton. East moving water	0°00'00"E	0°00'00"N	Analysis Slide	Delete Copy Edit

Diatom Database - Sample Editor - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://dolphin.csir.co.za:8080/cocoon/diatom/db/newsample.do

Southern African pre... Main Page - SaltyWiki Thesaurus.com South African Weath... IEX Nieuws IOL: News for South ... Diatom Database Firefox 1.5 and local ... Open XML Editor

Diatom Database - Sample Editor

HOME SAMPLES SLIDES PUBLICATIONS LOOKUP LISTS DARWIN USERS REPORTS SEARCH LOGOUT

Sample Editor

Sample Details

Series	-	Collection	CSIR Diatoms *	Site Code		Collector	Adams, N.A.	Sample Date (MM/DD/YYYY)	
Site Description									
Preparation Medium	None	Sample/Bottle Code	*	Cleaned Material?	☐	Cleaned Material-Drawer No.		Uncleaned Material?	☐
Uncleaned-Material Drawer No.									

Sample Location

Country	South Africa	Region	-	Water Body	
Aquatic Biome	-	Habitat	-		
Longitude (DMS)					
Latitude (DMS)					
Accuracy (m)		Altitude (m)			
Comments					

OK Cancel

Done

Microsoft Excel - report-sampleall-1.xls

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Type a question for help

Arial 10

E2 Schoeman, F.R.

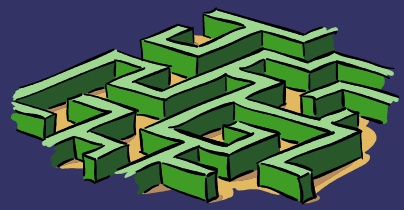
	A	B	C	D	E	F	
1	Operator	Collection	Series	Site Code	Collector	Date	Description
2	Vasha Chetty	CSIR Diatoms	Series 'G'	G211	Schoeman, F.R.	18/10/1983	Grootmis near Kleinsee, south of Port Nolloth. Algal scrape from water trough.
3	Catherine Stow	CSIR Diatoms	Agnew	A004	Agnew, J.D.	21/06/1961	Shashe River
4	Catherine Stow	CSIR Diatoms	Agnew	A1	Agnew, J.D.	21/06/1961	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)
5	Catherine Stow	CSIR Diatoms	Agnew	A10	Loedolf, C.J.	23/08/1961	Lusaka. Oxidation Pond. Plankton
6	Catherine Stow	CSIR Diatoms	Agnew	A11	Loedolf, C.J.	25/08/1961	S. Rhodesia. Marandella. 150 yards below final pond in effluent channel
7	Catherine Stow	CSIR Diatoms	Agnew	A12	Loedolf, C.J.	22/08/1961	Kafne River. Before Kitwe, below federal road bridge. Scrapings from Rock Pools? Copper P
8	Catherine Stow	CSIR Diatoms	Agnew	A13	Loedolf, C.J.	21/08/1961	Ndola. N. Rhodesia. Tertiary pond effluent channel, scarpings of cement bottom
9	Catherine Stow	CSIR Diatoms	Agnew	A14	Loedolf, C.J.	23/08/1961	Kafne R. At Kafne bridge at Kafne. Off plants in backwash
10	Catherine Stow	CSIR Diatoms	Agnew	A15	Loedolf, C.J.	21/08/1961	Ndola. 100 yards below teriary pond outlet
11	Catherine Stow	CSIR Diatoms	Agnew	A16	Loedolf, C.J.	23/08/1961	Kafne +- 100 yards below sewage works in effluent channel
12	Catherine Stow	CSIR Diatoms	Agnew	A2	Agnew, J.D.	21/06/1961	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)
13	Vasha Chetty	CSIR Diatoms	Agnew	A3	Agnew, J.D.	21/06/1961	Victoria Falls. Stream over rocks above gorge (cyanophyte sample)
14	Catherine Stow	CSIR Diatoms	Agnew	A5	Agnew, J.D.	24/06/1961	Mazoe River (Diatom and other algae)
15	Catherine Stow	CSIR Diatoms	Agnew	A6	Agnew, J.D.	25/06/1961	Shire River at Mpatapanda Gorge (Green algae)
16	Catherine Stow	CSIR Diatoms	Agnew	A7	Loedolf, C.J.	23/08/1961	Kafne. Tertiary oxidation pond scrapings off wall
17	Catherine Stow	CSIR Diatoms	Agnew	A8	Loedolf, C.J.	23/08/1961	Kafne +- 300 yards below sewage works in effluent channel
18	Catherine Stow	CSIR Diatoms	Agnew	A9	Loedolf, C.J.	23/08/1961	Kafne +- 200 yards below sewage works in effluent channel
19	Catherine Stow	CSIR Diatoms	Barberton Area	BA003	Cholnoky, B.J.	19/07/1955	Kaap River under the birdge ***al Kaapmuiden
20	Catherine Stow	CSIR Diatoms	Barberton Area	BA004	Cholnoky, B.J.	19/07/1955	The first small river, under the road bridge on the road to Carolina from Barberton. Fast movir
21	Catherine Stow	CSIR Diatoms	Barberton Area	BA005	Cholnoky, B.J.	19/07/1955	The first small river, under the road bridge on the road to Carolina from Barberton. Pool of sta
22	Catherine Stow	CSIR Diatoms	Barberton Area	BA006	Cholnoky, B.J.	19/07/1955	Suid Kaap River below the bridge on the Nelspruit-Barberton road. Very fast flowing water.
23	Catherine Stow	CSIR Diatoms	Barberton Area	BA007	Cholnoky, B.J.	19/07/1955	Suid Kaap River below the bridge on the Nelspruit-Barberton road. Pool of standing water
24	Catherine Stow	CSIR Diatoms	Barberton Area	BA008	Cholnoky, B.J.	20/07/1955	A small seepage near the road to Pigg's Peak in the Pigg's Peak area.
25	Catherine Stow	CSIR Diatoms	Barberton Area	BA009	Cholnoky, B.J.	20/07/1955	A river between Pigg's Peak and Havelock Mine, in the forest.
26	Catherine Stow	CSIR Diatoms	Barberton Area	BA010	Cholnoky, B.J.	20/07/1955	A small spring near Havelock Mine
27	Catherine Stow	CSIR Diatoms	Barberton Area	BA011	Cholnoky, B.J.	20/07/1955	A small stream from the spring near Havelock Mine
28	Catherine Stow	CSIR Diatoms	Barberton Area	BA012	Cholnoky, B.J.	21/07/1955	Tributary of the Nels River, south of Sabie
29	Catherine Stow	CSIR Diatoms	Barberton Area	BA013	Cholnoky, B.J.	21/07/1955	Very small spring along a tributary of the Nels River, south of Sabie
30	Catherine Stow	CSIR Diatoms	Barberton Area	BA014	Cholnoky, B.J.	21/07/1955	Small spring near the Sobageni junction between Nelspruit and Sabie
31	Catherine Stow	CSIR Diatoms	Barberton Area	BA015	Cholnoky, B.J.	21/07/1955	Another small spring near the Sobageni junction between Nelspruit and Sabie
32	Catherine Stow	CSIR Diatoms	Barberton Area	BA016	Cholnoky, B.J.	21/07/1955	Seepage on granite rocks east from Nelspruit on road to Kaapsehoop.
33	Catherine Stow	CSIR Diatoms	Barberton Area	BA017	Cholnoky, B.J.	21/07/1955	Furrow from the seepage on granite rocks east from Nelspruit on road to Kaapsehoop.
34	Catherine Stow	CSIR Diatoms	Barberton Area	BA018	Cholnoky, B.J.	21/07/1955	A small river in the same locality as 16 "Seepage on granite rocks east from Nelspruit on roa
35	Catherine Stow	CSIR Diatoms	Barberton Area	BA019	Cholnoky, B.J.	21/07/1955	A larger river *** granite rocks further east of Nelspruit. Slowly moving water
36	Catherine Stow	CSIR Diatoms	Barberton Area	BA020	Cholnoky, B.J.	21/07/1955	A larger river *** granite rocks further east of Nelspruit. Fast moving water
37	Catherine Stow	CSIR Diatoms	Barberton Area	BA021	Cholnoky, B.J.	22/07/1955	A swampy river on the road to Kaapsehoop on the "Waterfall" fa***.
38	Catherine Stow	CSIR Diatoms	Barberton Area	BA022	Cholnoky, B.J.	22/07/1955	Larger river more East of Barberton in the same locality as 21 "...the road to Kaapsehoop on
39	Catherine Stow	CSIR Diatoms	Barberton Area	BA023	Cholnoky, B.J.	22/07/1955	Larger river more East of Barberton in the same locality as 21 "...the road to Kaapsehoop on
40	Catherine Stow	CSIR Diatoms	Barberton Area	BA024	Cholnoky, B.J.	22/07/1955	Second larger river on sandstone above the road bridge to Kaapsehoop
41	Catherine Stow	CSIR Diatoms	Barberton Area	BA025	Cholnoky, B.J.	22/07/1955	A waterfall on the same river as in 24. Taken from the mosses.
42	Catherine Stow	CSIR Diatoms	Barberton Area	BA026	Cholnoky, B.J.	22/07/1955	Same locality as 25, "A waterfall on the same river as in 24". Taken from the rocks.
43	Catherine Stow	CSIR Diatoms	Barberton Area	BA027	Cholnoky, B.J.	22/07/1955	Full river; below the bridge on the Kappmuiden-Barberton road near the station Louwskrieg.
44	Catherine Stow	CSIR Diatoms	Barberton Area	BA028	Cholnoky, B.J.	23/07/1955	A small river in the forest along the road to Kaapsehoop
45	Catherine Stow	CSIR Diatoms	Barberton Area	BA029	Cholnoky, B.J.	24/07/1955	A small river between the rivers North Kaap and South Kaap on the road between Barberton
46	Catherine Stow	CSIR Diatoms	Barberton Area	BA030	Cholnoky, B.J.	24/07/1955	Same locality as 29, "A small river between the rivers North Kaap and South Kaap on the roa
47	Catherine Stow	CSIR Diatoms	Barberton Area	BA031	Cholnoky, B.J.	25/07/1955	Nels River above the road bridge ** on the road Nelspruit - White River
48	Catherine Stow	CSIR Diatoms	Barberton Area	BA032	Cholnoky, B.J.	25/07/1955	Same locality as 31, "Nels River above the road bridge ** on the road Nelspruit - White River
49	Catherine Stow	CSIR Diatoms	Barberton Area	BA033	Cholnoky, B.J.	25/07/1955	A larger spring along the river at the same locality as 31, "Nels River above the road bridge *

Sample Download

Ready NUM

Digitisation Phase 2

- Scan and link remainder of Analysis sheets
- Extend functionality of database
  - Spatial data
  - Taxonomic data
- Compile taxonomic standard list
- Compile georeference data
- Link to River Database



A South African Surface Drainage Network for GIS

Michael Silberbauer and Danieël Wildemans, Resource Quality Services, Department of Water Affairs and Forestry, Private Bag X313, PRETORIA South Africa 0001 - SilberbauerM@dwaf.gov.za SASAqS/ZSSA, Cape Town 2003

COMPLETED?

No, 8% of the coverage is still unedited (mainly in the central region) while a further 10% is outside the range of our reference data.
Twelve quaternary drainage regions have no rivers.
Many river naming problems remain unresolved (!Nu or iXnu or Wildebees?).
Despite these shortcomings, we have decided to release the coverage for general use: please inform us of any errors you discover.

PEDIGREED

The coverage is based on the 1:500 000 rivers provided by Surveys and Mapping in 1994. GisLAB performed the first fix in 1995, filling gaps, ordering and pruning. Our group has performed spatial adjustments to align the rivers to the Surveys and Mapping 1:50 000 coverage. We have filled in the gaps from ESRI's Digital Chart of the World, the Hydrogeological Map of Namibia and assorted other data.

CODED

The network has USA-style river reach codes:

C 9 2 B 0 2 0 0 0 0

The first four digits are the 1°, 2°, 3° and 4° drainage region. These can be expanded through a look-up table to the 8 digits required by BASINS. We allocate the quaternary code of the region in which most of the river lies.
The next two digits are a sequence code from 01 to 99 for the reaches within a quaternary drainage region.
The last four digits allow for the addition of more rivers later.
At the 1:500 000 scale, the *first six* digits uniquely identify a reach.

ANALYSED

The coverage consists of 10 160 line segments made up of 996 630 vertices, and conforms to the Cape Datum.

NAMED

Sixty percent of the rivers have names: 5% of these have aliases (e.g. old names or alternative spellings). About 1% are spelt incorrectly.

ORDERED

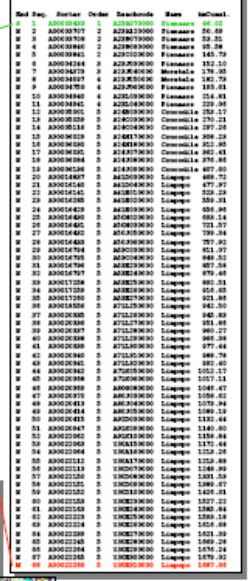
The entire network is ordered using the Strahler method with Lamphear and Lewis's algorithm.

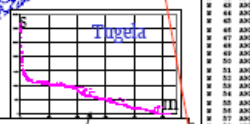
ALIGNED

Seventy-four percent of the rivers are within our tolerance (±50m of the 1:50 000 river coverage). Sixteen percent are in areas with no reference data, 8% have errors in their endpoints and 2% do not comply with the reference data at all.

EXTRUDED

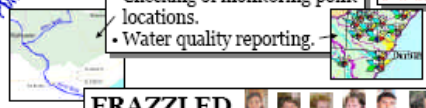
Five-thousand-and-sixty-two tables of every possible source-to-mouth sequence, for example:





APPLIED

- Profiles against digital elevation models.
- Checking of monitoring point locations.
- Water quality reporting.



PUBLISHED

http://www.dwaf.gov.za/iwqs/gis_data/river/rivs500k.html

FRAZZLED

The nerves of Naomi Roberson, Juanita Moolman, Elna Vermaak, Magda Smidt, Kama Chetty and Axel Diefenbach, without whose hours of mouse-breaking toil this coverage would never have happened.

Summary

- 8000 bottles and 20 000 slides
- 350 books 5 500 research articles
- on-line beginning of 2009
- Inclusion of taxonomic and geographic data will enable distribution maps
- Link with Rivers database will facilitate selection of reference sites for River Health Programme
- (Inter) National interest is growing