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Contributions of TDSB campaigns to the discovery of cone snails from the deep sea

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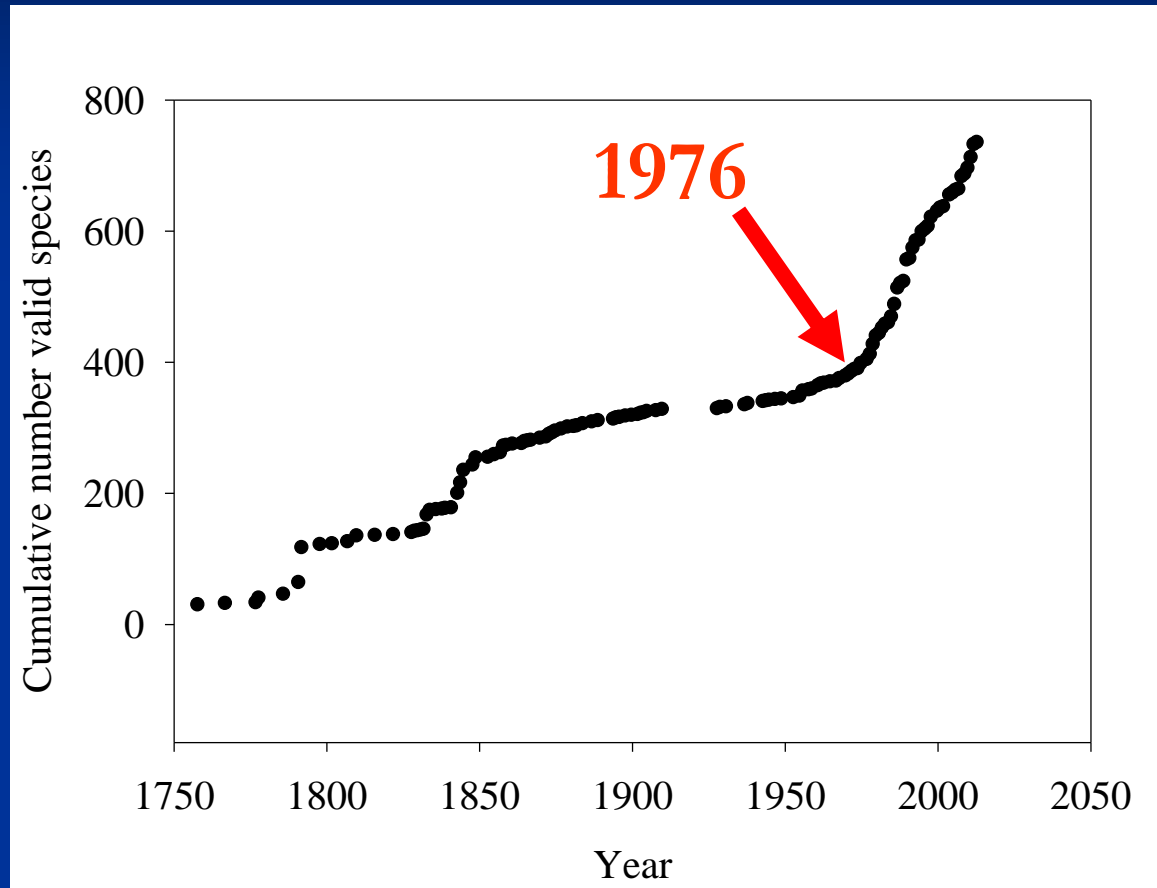
Cone Snails



Cone Snails and Conotoxins

- Cone snail venoms constitute a huge **natural farmacopaea**.
- Venom active components are **oligopeptides**, typically with a chain length between **12 and 30 aminoacids**.
- Very constrained structures due to the presence of disulfide bridges between **Cysteine** residues.
- Very little is know about conotoxins from **deep water** cone snails.

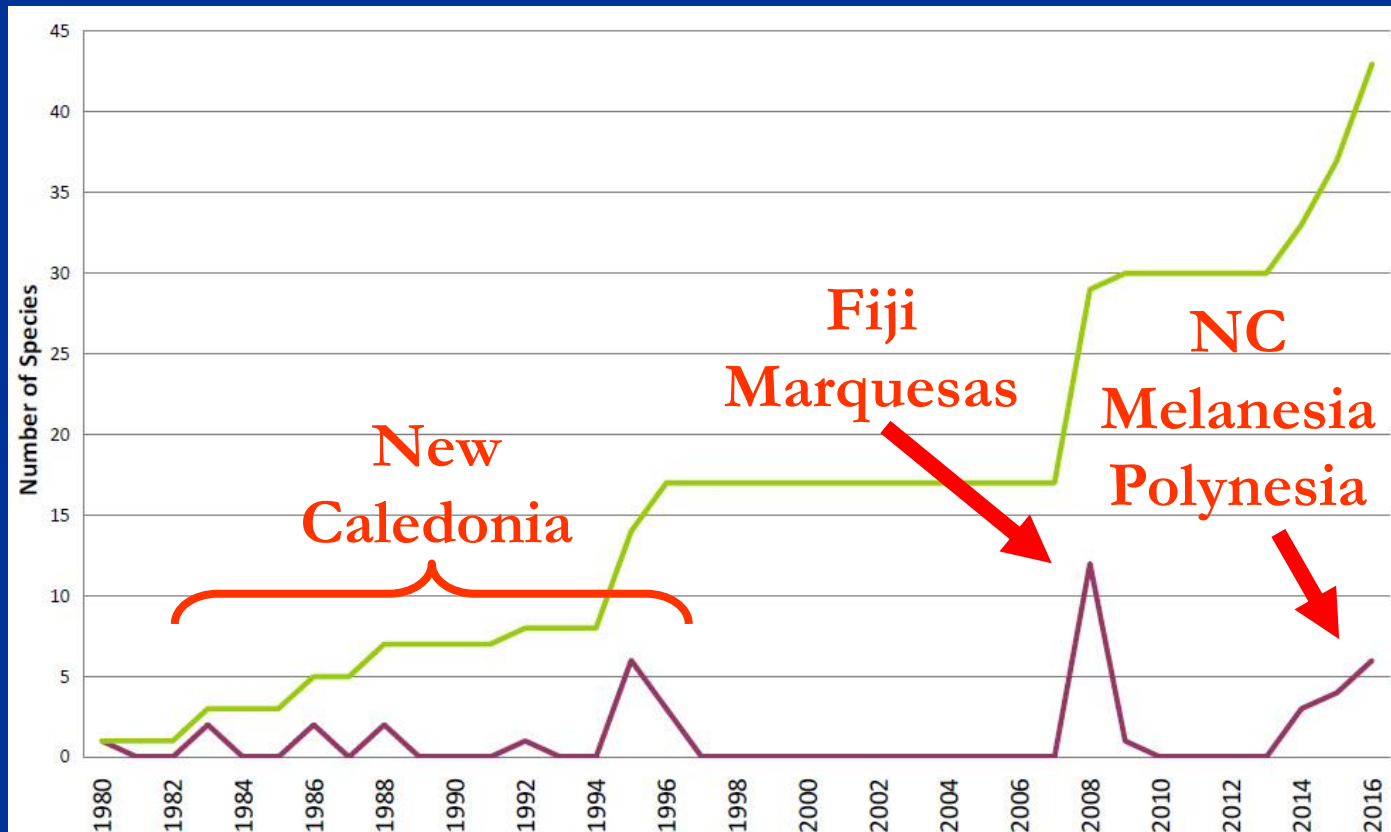
Number of species



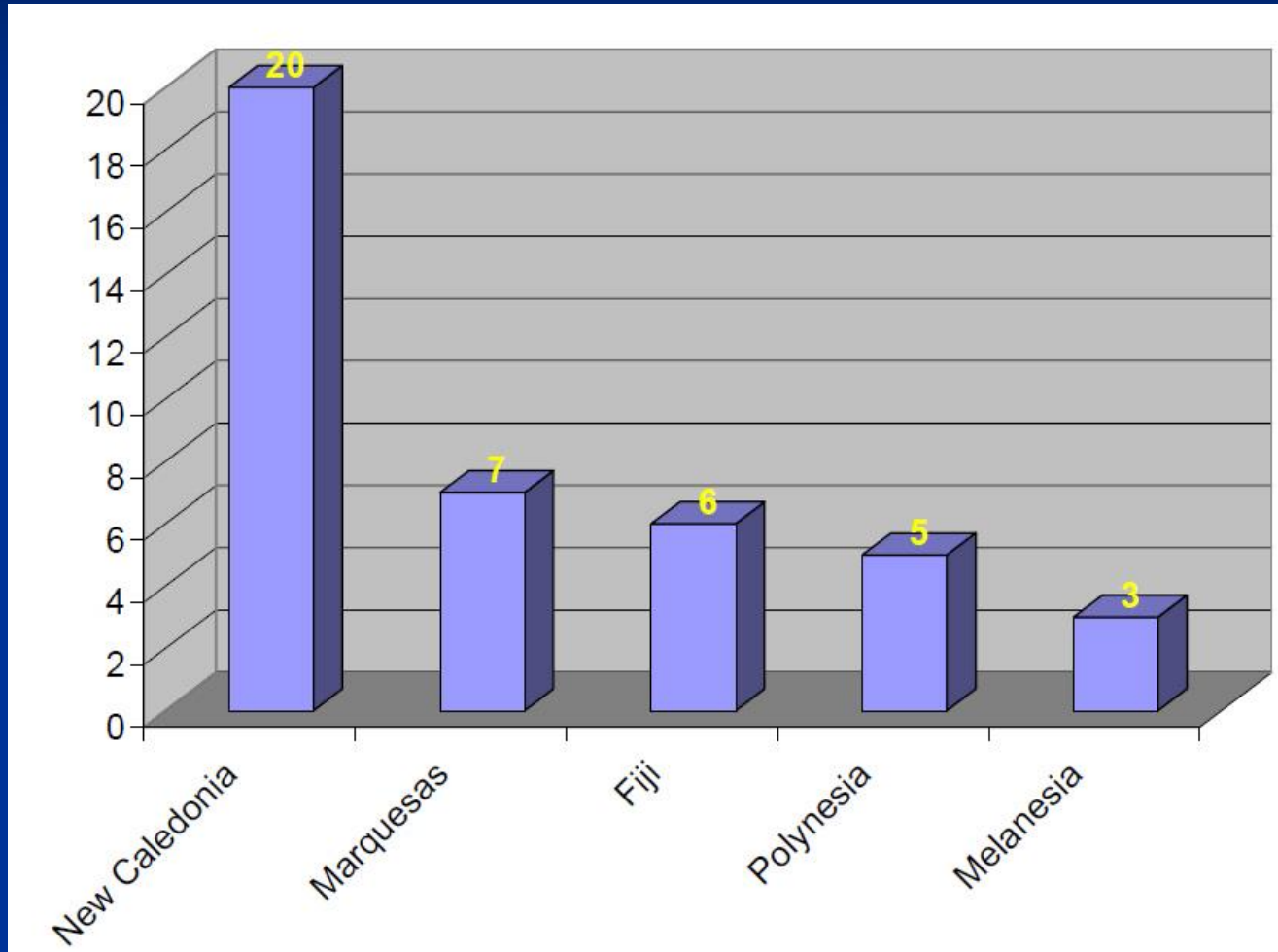
2016 – around 900 species of *Cones sensu lato*

Discovery of new cone species

- **More than 40** new species of cone snails have been described based upon material gathered by TDSB expeditions.
- Most of them are deep water species (100 – 1000 m depth) and with restricted geographical ranges



New Cone Species by Locality



Cones from New Caledonia

- MNHN-Paris/ORSTOM, then IRD has been carrying out oceanographic expeditions in the deep waters surrounding New Caledonia and beyond since 1980 (TDSB)
- Surveying the seamounts of the Norfolk Ridge, dredging and trawling from 80 m to a depth of 3000 m.
- Other areas covered included the Plateau des Chesterfield and the Grand Passage.
- These research cruises produced large lots of deep-water cone snails, with exact depth and locality data..



P. kanakinus



C. boucheti



C. luciae



C. richeri

Cones from New Caledonia



C. plinthis



C. estivali



C. coriolisi



P. vaubani



C. alisi



P. loyaltiensis



C. gondwanensis



C. swainsoni

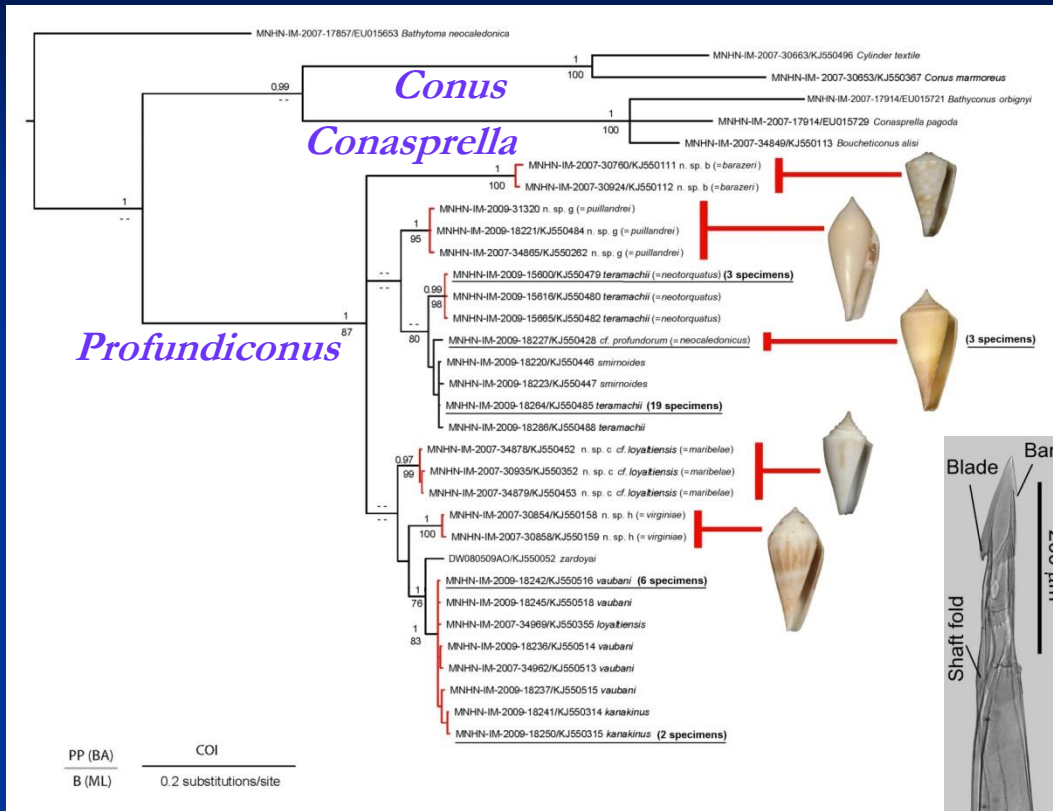
Cones from Fiji (MUSORSTOM 7 and 10/BORDAU 1)



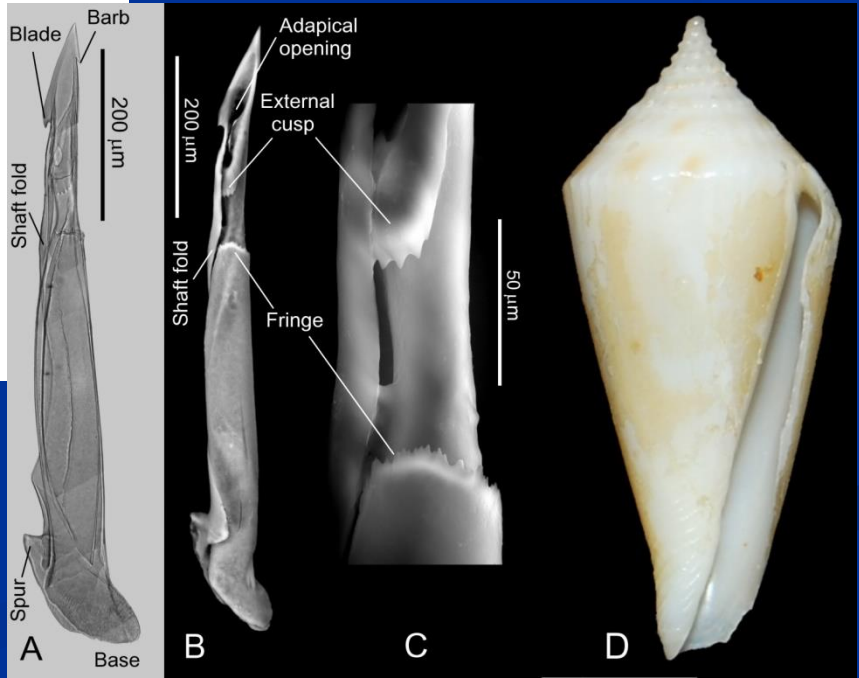
Cones from French Polynesia (MUSORSTOM 9/TARASOC)



Current works: *Profundiconus*

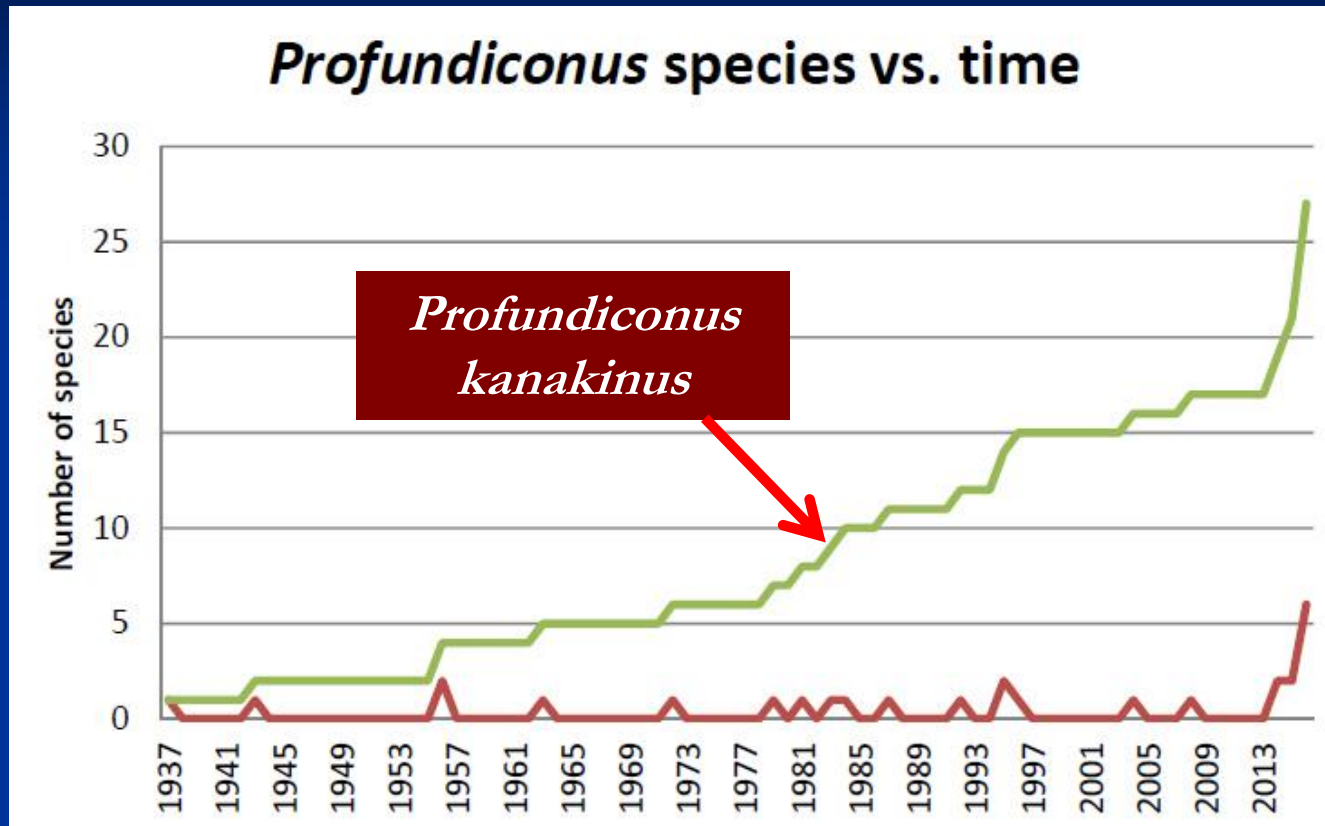


MOLECULAR AND MORPHOLOGICAL STUDIES



- *Profundiconus* species normally live in deep to very deep water (down to 1134 m)
- They constitute one of the main components of the gastropod fauna at depths below 200 m in the Tropical Indo-Pacific.

Species in *Profundiconus*



- In the last 5 years, the number of known living species of *Profundiconus* has increased from **16** to **28** (increase of **75%!**)
- Half of the species in the genus were described from material coming from **TDSB expeditions**

Profundiconus from New Caledonia

Recently described (2015-2016) *Profundiconus* from Grand Passage, Chesterfield Plateau, Pine Island and Norfolk Ridge



zardoyai



smirnooides



barazeri



virginiae



puillandrei



neocaledonicus

Material from expeditions BATHUS, BERYX, CHALCAL, CONCALIS, EBISCO, EXBODI, MUSORSTOM, NORFOLK, SMIB, TERRASSES

Profundiconus from other locations



P. maribelae

Solomon Islands
SOLOMON, SOLOMONBOA exp.



P. robmoolenbeeki



P. tarava

Punu Taipu Seamount,
French Polynesia
TARASOC exp.

The (Near) Future...

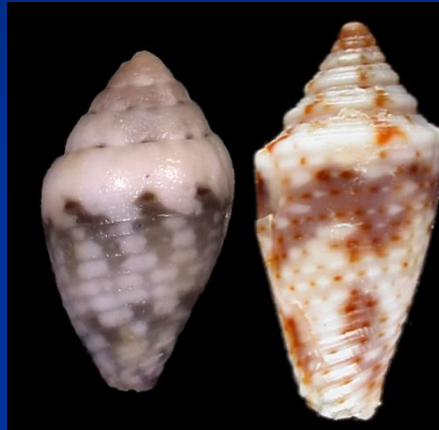
NEW SPECIES TO BE DESCRIBED...



Papua
New
Guinea

New
Caledonia

NEW TAXONOMIC FINDINGS...



Two new lineages of cone snails:

- *Lilliconus*
- *Pygmaeonus n. gen.*

NEW CONOTOXINS TO BE DISCOVERED FROM DEEP WATER CONE SNAILS...



STUDY OF MATERIAL FROM MADAGASCAR, MARTINIQUE, GUADELOUPE, GUYANA, ETC...

AND MUCH MORE...

Acknowledgements



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