

Trematodes in Tangs: species flocks and cluster observations

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KINGDOM

GyLIAUCHENIDAE Ozaki, 1933

- endemic to herbivorous reef fishes in Pacific and Indian Oceans
 - ◆ Siganidae, Acanthuridae, Zanclidae, Scaridae, Pomacanthidae, Chaetodontidae.
- diagnosed by oesophageal bulb, posterior ventral sucker and terminal genitalia

OTUs from *Zebrasoma*

- *Z. scopas* and *Z. veliferum* sampled from Heron and Lizard Islands
- Heron Island:
 - ◆ *Z. scopas*: OTU1, OTU2
- Lizard Island:
 - ◆ *Z. scopas*: OTU1, OTU2, OTU3
 - ◆ *Z. veliferum*: OTU4

Differences among OTUs

■ OTU1

- ◆ pear-shaped pharynx
- ◆ oesophagus: single loop
- ◆ diagonal testes

■ OTU2

- ◆ barrel-shaped pharynx
- ◆ oesophagus: single - double loop
- ◆ diagonal testes

■ OTU3

- ◆ barrel-shaped pharynx
- ◆ oesophagus: single loop
- ◆ symmetrical testes

■ OTU4

- ◆ barrel-shaped pharynx
- ◆ elongate ventral sucker
- ◆ elongate body

Multivariate Analysis

- previous uses for helminth taxonomy: Bray & Sophie, 1987
- new application for cluster observations and discriminant analysis
 - ◆ isolates members of groups rather than characters for identification

Materials and Methods

- 79 individuals measured
- Cluster observations (CO):
 - ◆ Ward and Complete linkage
 - ◆ Pearson distances
 - ◆ OTU3 and OTU4 used as similarity indicators
- cluster membership as indicator in discriminant analysis (DA)

Results

- OTUs grouped in loose clusters
- members of same cohort clustered well
- group membership 100% accurate during DA
- arbitrary alteration of true group detected and reassigned by DA

Conclusions

- CO and DA useful for determining group membership of unidentified samples
- genetic closeness of cohort reflected in clusters
- character development and change can be examined by clustering

Future directions

- samples from *Z. scopas* from New Caledonia added into dataset
- further collecting in Western Australia (Indian Ocean)
- apply CO and DA to *GyLIAUCHEN* from Australian *Siganus*
- trace character evolution for all gyLIAUCHENIDS