



2014 Biodiversity Planning Forum

13–16 May, Mpekwani Beach Resort, Eastern Cape

Marine Alien & Invasive species



By: S. Miza, P. Majiedt & K. Sink

Outline

- ✓ Overview of marine alien and invasive species
- ✓ Vectors
- ✓ Impact
 - Ecological
 - Economical
- ✓ Monitoring Initiatives & Aims



Marine alien species

What are Marine alien & invasive species?

- introduced intentionally or accidentally.
- “invasive” as soon as they reproduce, multiply and become tolerant.
- Found in the beach, rocky shores, inshore & offshore.

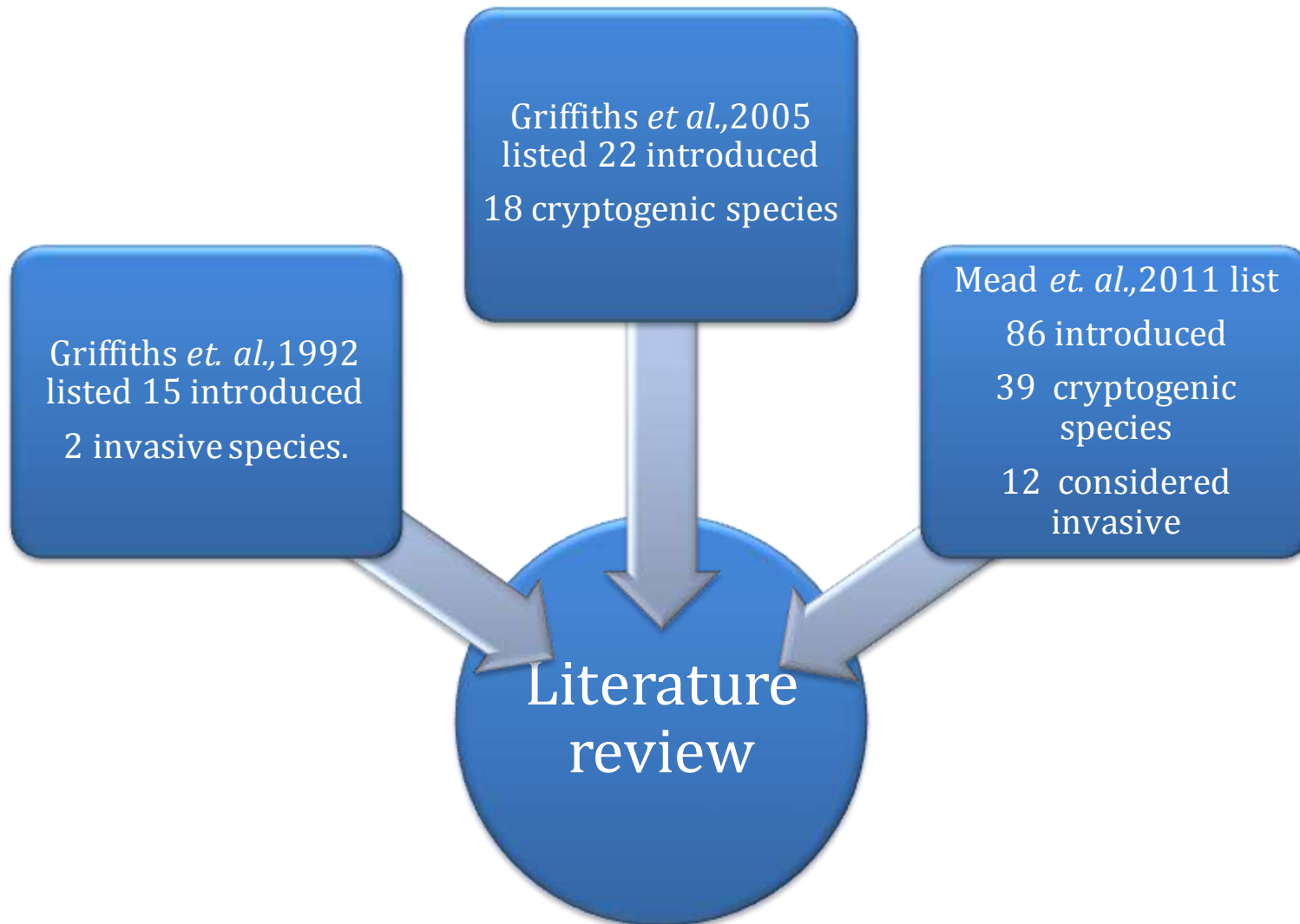


Globally

- They are globally recognised as threats to native marine species & drivers of environmental change.



In South Africa



- Cryptogenic referring to species that cannot be reliably demonstrated as being introduced or native.

Biological
Invasions



ALIEN & INVASIVE
ANIMALS

a South African
perspective

Mike Picker
Charles Griffiths



African Journal
of Marine Science



Vectors

- Shipping, Petroleum sector, mariculture & aquarium trade.

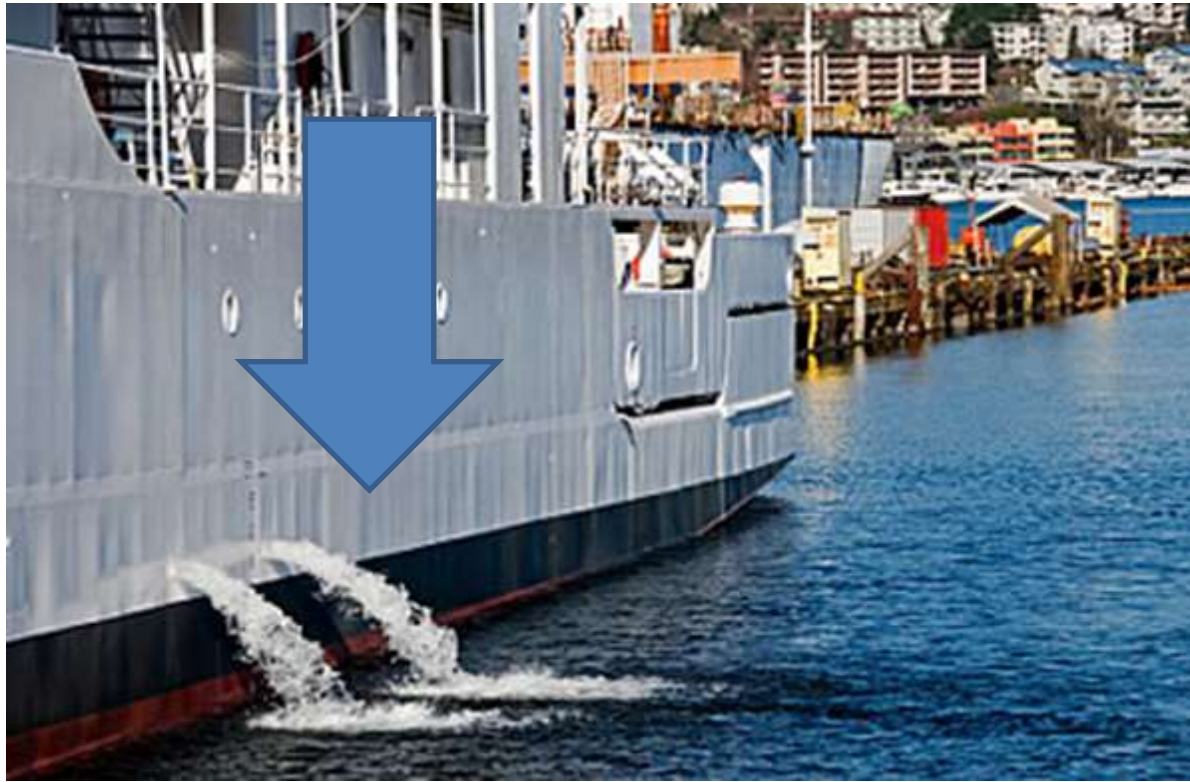
Shipping –plays a major role in world trade, carrying internationally traded goods.

- Plays a role in marine alien species introduction
 - ballast water & fouling



Ballast water –
stability of the ship
when partially or
completely empty of
cargo.

- Marine alien species
introduction through
discharge of ballast
water.
- e.g. the Brooding
anemone which
originates from
Europe



Fouling- long-distance slow dispersal of common organisms through hitch-hiking, hanging-on and/or rafting on ships.

- E.g Shell worm;
origin: Pacific coast of North America and Japan
- a “fouling organism”.



- **Petroleum industry-**
explore, extract, refine,
transport & market
petroleum products.
- Plays a potential role in
the introduction, hosting
& spreading of MAS



- The feather duster anemone from the North Atlantic
- Through petroleum infrastructure was introduced here in SA.



Photograph: JC Schou

➤ **Mariculture-** ie.

- Aquaculture- the farming of marine organisms for food.
- Through which the spread of the Pacific oyster introduced the Black sea urchin *Tetrapygus niger*.



David Monniaux



Rubén Guzmán Pittman

Aquarium trade- the removal and collection of marine ornamental organisms for aquarium display.

- Australian seaweed introduced unintentionally into the Mediterranean sea in 1984.
- It replaces native sea grasses and limits natural habitat for larval fish and invertebrates.



Impacts of invasions

Ecological change

- Compete with native species
- Alter trophic structure & physical appearance of invaded area
- E.g the Mediterranean mussel

Natural History Museum, Rotterdam



Economic loss

- Direct economic losses
- Dramatic alteration of ecosystem
- For example, the Green crab
- In SA it has not yet proven economic loss



Examples of marine invasive species in SA

Natural History Museum, Rotterdam



Bisexual mussel

Semimytilus algosus

Origin: Chile &
Namibia

Habitat: Rocky
shores

Impacts: Compete
with shellfish for
food & space



Sea vase ascidian

Ciona intestinalis

Origin: North east
Atlantic

Habitat: Subtidal
bathyal or deep water
down to 500m &
shallow waters

Impacts: coats marine
structures killing
mussels



Photograph: Bernard Picton





Black coral worm

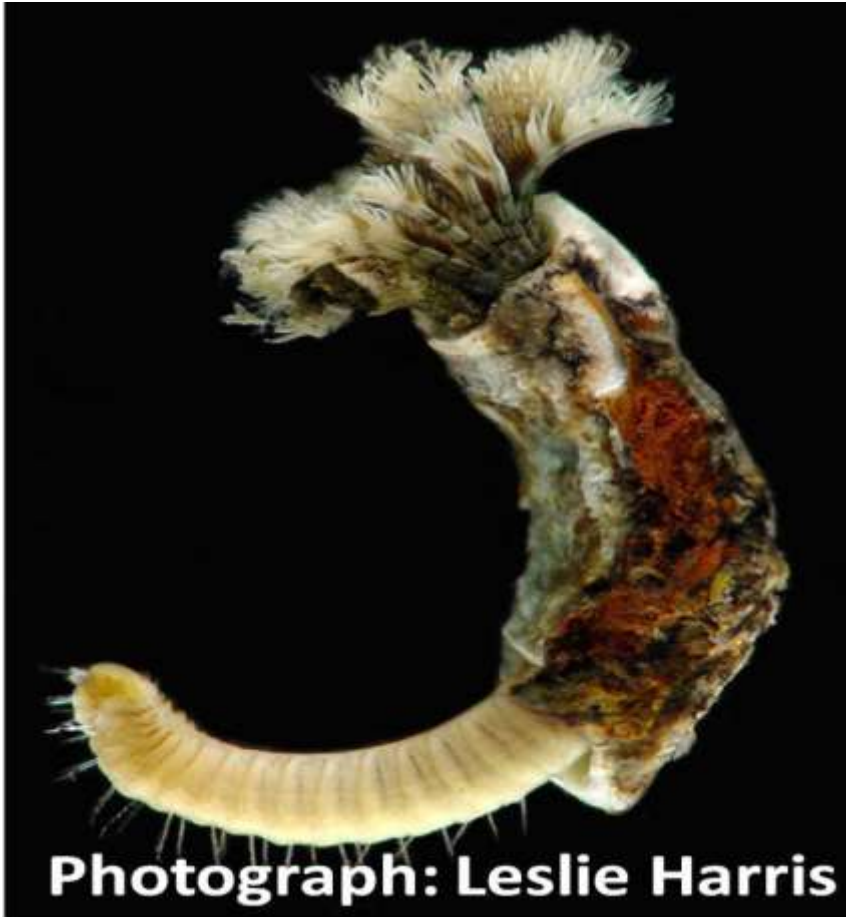
Dodecaceria fewkesi

Origin: Pacific USA

Habitat: Hard substrata
like harbour wharfs.

Impacts: forms hard
coral-like colonies





Reef worm

Ficopomatus enigmaticus

Origin: Australia

Habitat: low-salinity sections of estuaries, attached to rocks, jetties, boats and any other hard surface.

Impacts: constrict pipes & channels as fouling organisms



Monitoring Initiatives

- Updating the MIS list
- Compiling species dossiers
- Taxonomy- to define “cryptogenic species”
- Raise awareness to the general public, eg iSpot
- Develop a Marine Alien Species field guide
- Workshops underway
- Collaboration in projects towards monitoring and Rapid Response



THE END





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