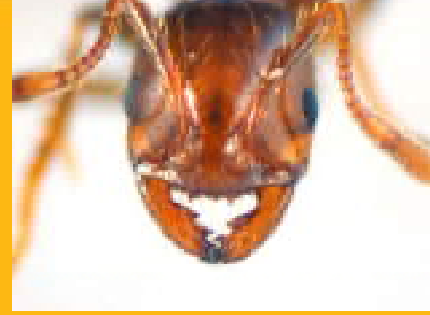

International yachts – a pathway for the spread of invasive ants

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Outline

1. **Introduction**
2. **International yachts as a hitchhiker pathway**
3. **Case studies**
   - Surveillance
   - Organism Management
   - Movement Control
4. **Surveillance programmes**
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INTRODUCTION

Every year, between October and late December, large numbers of overseas yachts arrive in New Zealand waters and make their way to a clearance port.

This pathway is regarded as a potentially high biosecurity risk for the introduction of:

- Marine bio-fouling
- Hitchhiking and infesting species

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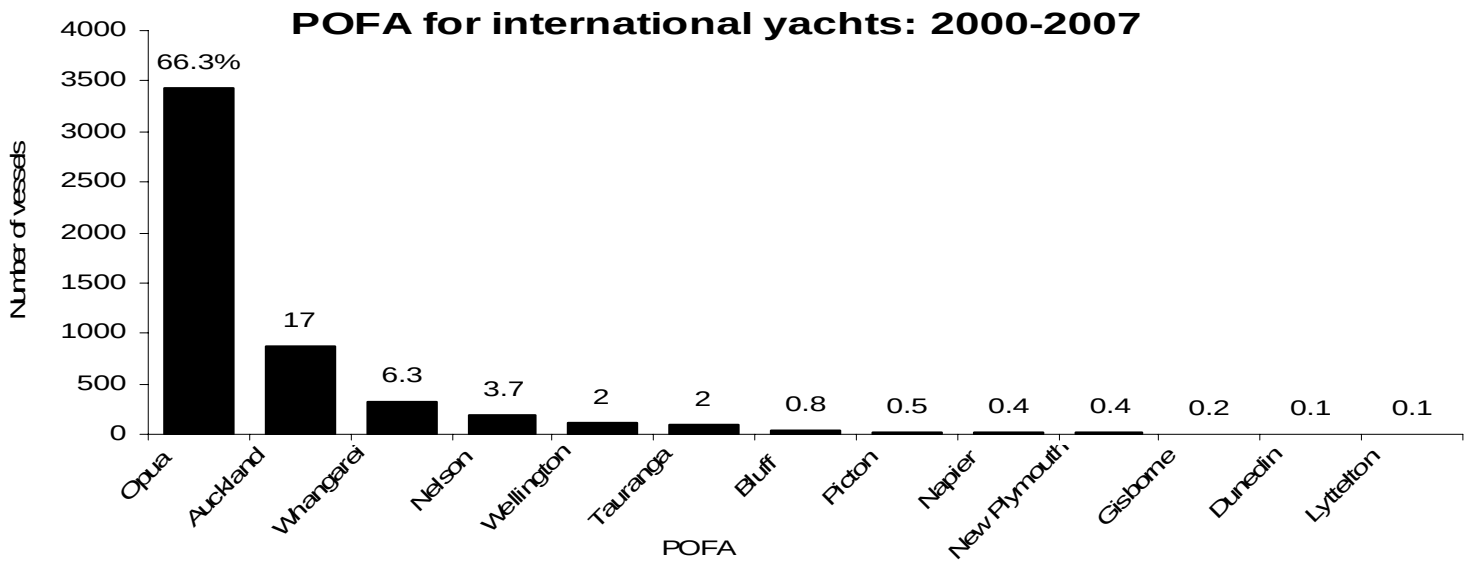
Yacht arrivals

Year	2006	2007	2008	2009
No. Yachts	409	469	422	400+



- Opua processes ~66% of overseas yachts
- On busiest day at Opua (2009) 22 yachts are waiting for inspection.
- Between 00–07, 5161 private vessels from 35 countries were cleared to enter NZ
- 60% of ant border interceptions originated from the Pacific Islands

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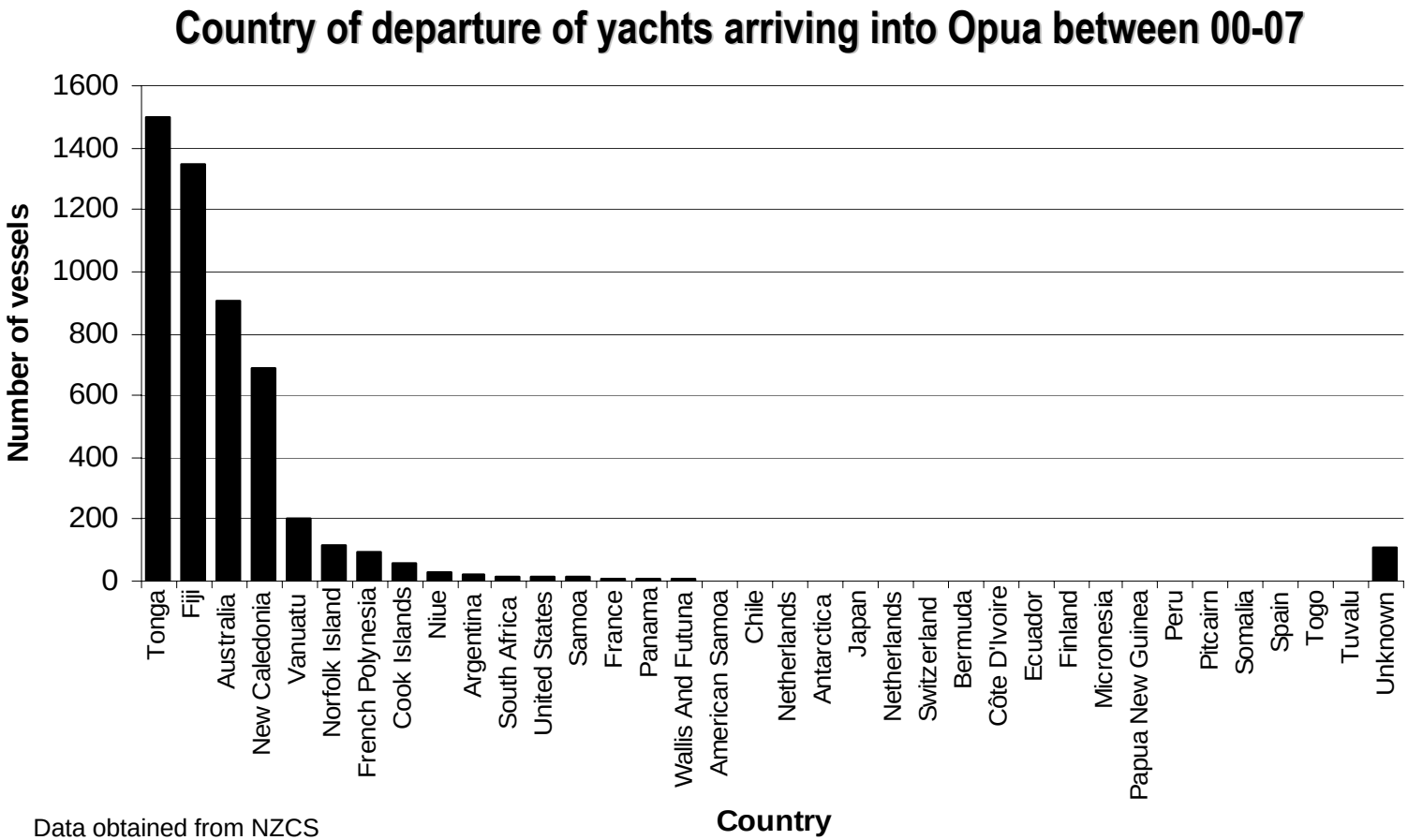
Where are yachts coming from?



Data obtained from NZCS

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One of New Zealand's greatest assets is its relative geographical isolation:

- Less than 10%of world's pests and diseases occur in New Zealand.
- Small island country known for lush vegetation, farming and natural beauty,
- Major parts of the economy are dependent on the country's environment.

That is why just one new pest or disease could be devastating.

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Other pathways

Invasive ants introduced to NZ via international yachts are less perceptible than more obvious routes such as:

- Shipping containers
- Break bulk cargo
- Vehicles

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MAF Ant Work

Vigilance to introductions on yacht pathway highlighted by:

- Investigations by MAF IDC into exotic ants on yachts resulting in incursion responses
- Yacht Monitoring Survey conducted by the MAF Border Monitoring Group (Oct –Dec 2009)
- National Invasive Ant Surveillance risk sites

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Yacht Clearance Process

Arrival by sea is governed by regulations and processes including:

- Declaration completed by Captain for hitchhiker pest organisms
- Yacht crews check for onboard pests
- Notify MAF on arrival if anything found
- After clearance yachts cruise freely in New Zealand waters.

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In addition to routine checks for marine growth on the hull and removal of prohibited stores, yachts are inspected for live pests, with ants and termites being the main focus.

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Onboard ant infestations are not always immediately evident to Quarantine Officers due to:

- non-disclosure by the Master during clearance procedures
- the cryptic nature of the organism
- lack of foraging due to time of inspection
- climatic conditions.

Further dispersal by humans assists spread

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Case studies

AQUILA (2009)

Aquila 50 m (164 ft) super-yacht arrived Auckland Harbour in August 2009 after six months in Tahiti (via Panama, Costa Rica, Galapagos Islands):

- MAFBNZ Quarantine inspected yacht on arrival - prohibited stores removed.

- No insect activity recorded on Ship Inspection Report or Captains Declaration.

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One month later Ghost ants (*Tapinoma melanocephalum*) were found:

- **Multiple nests thought to exist as activity was located across three decks**

- **Yacht had range of micro-habitats on four decks where food was stored.**

- **Chef saw larger ants foraging at night in kitchen window grill area – these were identified as *Camponotus* sp. (Carpenter ants)**

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SURVEILLANCE

Visual inspection of yacht and wharf. Bait stations laid in yacht and wharf out to 10m :

- *Tapinoma melanocephalum* **(in yacht)**
- *Camponotus* **sp. (in yacht)**

In addition to the two species of live exotic ants found on the yacht:

- *'Technomyrmex albipes'* **(White footed ant)**
- *Hypoponera* **cf.** *eduardi* **(Crypt ants)**
- *Sitophilus oryzae* **(Rice weevil)**
- *Oryzaephilus surinamensis* **(Sawtoothed grain beetle)**
- *Lasioderma serricon* **(Tobacco beetle).**

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ORGANISM MANAGEMENT

- Ghost ants - Sweet attractant (honey) for surveillance. Exterm-an-ant® toxicant for baiting
- *Camponotus* sp. – Crickets for night surveillance.
  Maxforce® toxic granular baits and Exterm-an-ant®
- Target areas: food storage, electronics, conduits, water sources, rubbish collection (onboard yacht and wharf)
- Pontoon/wharf
- Neighbouring yacht mooring lines and safety buoys

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Results

Activities over three months found:

- *Tapinoma melanocephalum* 1x queen and workers.
- *Camponotus* sp. queen in the main galley; a second queen 10 days later and one adult female month after
- No signs of any ants actively foraging during night surveillance.
- No ant activity by mid-November 2009

- **Cost of eradication = NZ $10,733**

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ARCHANGEL (2007)

Archangel 70 ft two masted ketch arrived Opua Harbour in November 2006 after a voyage around 20 countries (island states). Three months spent in Caribbean Islands.

Two months after relocating to Westhaven Marina Auckland *Solenopsis invicta* were seen trailing in several locations within the vessel.

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SURVEILLANCE

Visual inspection and bait stations in 10m x 10m grid at Westhaven and Viaduct Marina:

- Negative results for pontoons and seawall
- Postive nest found under cockpit of Archangel

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ORGANISM MANAGEMENT

- Attractant baits (protein and sugar-based) and visual inspection at 10m x 10m grids
- Toxic baiting over entire boat using Maxforce® (Silkworm) and Exterm-an-ant®
- Sticky traps to determine changes in live ant worker populations
- A single nest on board the ship was located - nest extraction attempted
- Wall cavity was flushed with an insecticidal gas
- Residual insecticidal spray to the wall cavity and all nest exit points

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RESULTS

Analysis of nest contents - collected prior to and during nest treatment:

- **nest thought to be small - 1600 workers, no minims, four major workers collected. (Estimated to be one half of total population)**
- **Colony on the yacht < seven months, > three months. Most likely ≤ 6 months.**
- **No alates (queens or males) observed**
- **Nest established by single queen (Monogyne colony)**
- **Unlikely any nuptial flights occurred**
- **Unlikely more than one nest was present**

Cost of eradication = ~ NZ$19,400

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MOVEMENT CONTROL

Prior to nest treatment yachts were subject to full movement restrictions:

- Remain at present berth unless transferring to non-land based structure
- Removal of items off the yacht quarantined or treated including rubbish and luggage
- Crew record log of destinations and addresses

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Surveillance Programmes

Yacht Monitoring Survey

Information required to develop yacht risk profiles:

- **Area on vessels where contaminating organisms found**
- **Relationship between contamination and vessel maintenance history**

Profiles will allow MAF to:

- **Target high-risk yachts for additional interventions**
- **Develop and implement new Import Health Standards for vessels**

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Summary of organisms found

Organism Type	Common Name	Frequency
Insecta	Insects	31
Sordariomycetes	Fungi	8
Arachnida	Spiders	6
Dothideomycetes	Fungi	4
Eurotiomycetes	Fungi	4
Saccharomycetes	Fungi	3
Zygomycota	Fungi	1
Magnoliopsida	Dicot plant seeds	1
Gastropoda	Snail	1
Total		**59**

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Of significance were exotic species:

Tapinoma melanocephalum **(x 3 yachts)**, *Paratrechina longicornis*, *Camponotus maculatus* **group (x 2 yachts),**

- **2009 yacht survey representative of ant detections at POFA in previous years**
- **Average 6 yachts/season with exotic ant infestations at Opua Marina**
- **Pestigas applied as control measure at POFA**

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SURVEILLANCE PROGRAMMES

NIAS

National Invasive Ant Surveillance targets identified high risk sites associated with likely pathways for exotic ant species imported via international trade and shipping:

- **Seaports/wharves/marinas**
- **International airports**
- **Container devanning sites**

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HRSS

High Risk Site Surveillance – focus on pests to forestry along international trade corridors:

- Transitional facilities
- International ports
- Industrial sites
- Sites of recent eradications
- Sites of suspected post border incursions

Trial extension in 2010 to include ant species

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Conclusions

- Heighten yachties awareness of biosecurity risk that hitchhiking pests pose.
- New category in Master's Declaration specifically targeting hitchhiking organisms
- Border inspections designed to detect ants.
- Pre-clearance and MAFBNZ working to relevant Import health Standards and border clearance procedures

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THANK YOU

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