

# Dr Jade Quinton Maggs

South African citizen with New Zealand permanent residency

Auckland, New Zealand | +6421 056 0873 | [jademaggs@gmail.com](mailto:jademaggs@gmail.com) | [LinkedIn](#) | [ResearchGate](#) | [Scopus h-index: 10](#) | [GitHub](#)

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I am a Quantitative Fisheries Scientist with more than 10 years' working experience and a record of internationally collaborative research. Currently, I am working for the National Institute of Water and Atmospheric Research (NIWA) in Auckland with a focus on surveys to inform stock assessment. I manage projects that use creel surveys to collect catch and effort data in the New Zealand recreational boat-based fishery, primarily for inshore fin-fish and lobster. In 2017, I was awarded a PhD in fisheries science from Rhodes University in South Africa. I also have experience with data management and GIS, and I have lectured part-time at postgraduate level on fishery stock assessment and R programming. I am a highly organised individual and I excel at leading change.

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## EMPLOYMENT HISTORY

- Apr 2020 - present     **NATIONAL INSTITUTE OF WATER AND ATMOSPHERIC RESEARCH (NIWA)** - New Zealand
- Group Manager - Modelling & Recreational Fisheries**
- Leading recreational boat fishery surveys (creel, camera)
  - Fisheries Modelling (GLM, CPUE standardisation, harvest estimation)
  - Focus on inshore fin-fish and rock lobster fisheries
  - Fishery characterisation
  - Working group participation (Marine Amateur Fisheries, Inshore Fisheries Assessment)
  - Leading team of three staff (two scientists, one technician) and also project-specific teams
  - Using R Programming Language and QGIS
  - Leading implementation of electronic data acquisition and streamlining workflows
  - Selected for in-house Leadership Development Programme
- Group Manager - Fisheries Data Services**
- Managed NIWA and Ministry for Primary Industries fisheries data (research and observer)
  - Managed commercial rock lobster catch sampling project
  - Led development of data loading software and PostgreSQL databases
  - Managed a team of six staff
  - Used R programming language, PostgreSQL, Linux, QGIS, GitLab
  - Established efficiencies and notable improvements in multiple workflows
- Jan 2019 - Mar 2020     **MINISTRY FOR PRIMARY INDUSTRIES (MPI)** - New Zealand
- Senior Analyst (Fisheries Management, Fisheries New Zealand)**
- Conceptualised a pathway to ecosystem-based fisheries management
  - Participated in Marine Protected Area (MPA) Science Advisory Group
  - Fishery stakeholder engagement (MPA network proposed near commercial rock lobster fishery)
- May 2006 - Dec 2018     **OCEANOGRAPHIC RESEARCH INSTITUTE** - South Africa
- Scientist:** Jun 2018 - Dec 2018
- Assistant Scientist:** Aug 2011 - May 2018
- Senior Scientific Technician:** Jul 2008 - Jul 2011
- Led recreational fisheries surveys (shore and boat) under government contract
  - Fisheries modelling (GLM, CPUE standardisation, fish movement)
  - Monitored relative abundance, movement and community composition of fishes in the Pondoland MPA
  - Postgraduate lecturing on stock assessment and R programming
  - Biological sampling of commercial fish species
  - Developed and administered fisheries monitoring databases (PostgreSQL)
  - Working Group participation (Linefish Scientific Working Group)
  - Team management (three staff)
  - Report writing

**Scientific Technician:** May 2006 - Jun 2008

- Assessment of fish communities in the Bazaruto Archipelago - consultancy
- Managed and designed environmental monitoring databases
- Managed a research aquarium laboratory
- Developed coral husbandry and propagation facilities

Jul 2004 - **USHAKA SEA WORLD** - South Africa

Apr 2006 **Aquarist II:** Feb 2006 - Apr 2006

**Aquarist I:** Feb 2005 - Jan 2006

**Commercial Diver:** Jul 2004 - Jan 2005

- Showed an affinity for animal husbandry - promoted from Diver to Aquarist
- Maintained aquarium exhibits and cultures laboratory
- Developed fish breeding and coral propagation facilities

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## CURRENT PROJECTS

- Design for a longline survey to estimate the age structure of New Zealand hāpuku
- Web camera monitoring of key marine amateur fisher access points
- Monitoring of recreational harvest of rock lobsters in CRA 2
- Monitoring the Kaikōura and Motunau boat-based marine amateur fisheries using a bus route survey
- Mortality rates of fish released by recreational fishers
- Estimation of recreational harvest in shellfish fisheries
- National mean fish weight survey

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## ACADEMIC QUALIFICATIONS

- PhD (Fisheries Science) | Rhodes University, 2017
  - Thesis title: Movement of coastal fishery species in southern Africa: research trends, characterisation of behaviours and a case study on fishery implications. Supervisor: Prof. Paul Cowley.
- MSc (Biology) | University of KwaZulu-Natal, 2011
  - Thesis title: Fish surveys in exploited and protected areas of the Pondoland Marine Protected Area with consideration of the impact of the MPA on coastal fisheries. Supervisors: Dr Bruce Mann & Prof. Paul Cowley.
- BSc (Zoology, specialising in environmental management) | University of South Africa, 2009

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## LECTURING EXPERIENCE

- Fishery stock assessment (University of KwaZulu-Natal, 2012-2018) - Postgraduate
- Introduction to R Programming (2016, 2017) - Postgraduate

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## TECHNICAL SKILLS

- **Software:** R programming | GIT | Quantum GIS | Ubuntu Linux | Bash | L<sup>A</sup>T<sub>E</sub>X
- **Statistics:** Maximum likelihood | Generalised linear modelling
- **Data management:** PostgreSQL
- **Field:** Class IV Commercial Diver (563 hours) | Class IV Commercial Dive Supervisor (313 hours) | Commercial Boat Skipper | Level 2 First Aid | STCW - PST, PSSR | servicing underwater environmental monitoring equipment | fish handling and tagging | specimen collection (biological/environmental)

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## MODELLING COURSES ATTENDED

- Zonation decision support software training (NIWA, Sep 2019)
- Ecofish stock assessment interpretation (Dept. of Agriculture, Forestry and Fisheries, Apr 2017)
- Introduction to L<sup>A</sup>T<sub>E</sub>X (University of KwaZulu-Natal, Jun 2016)
- Introduction to Fisheries Genetics (University of Stellenbosch, Mar 2016)
- Species distribution modelling (University of Stellenbosch, Feb 2013)

- Ecological modelling (IRD/University of Cape Town, Jun 2012)
  - Statistical modelling Using R (Tromsø University, Sep 2011)
  - Fish stock assessment (FAO/SWIOFP - Kenya, Sep-Oct 2010)
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## SHIP TIME

- RV Kaharoa, Cook Strait, Jul/Aug 2021 - 2 days - KAH2105 acoustic snapshot, trawling
  - FRV Africana, Natal Bight, Sep 2010 - 5 days - retrieve and deploy ADCPs
  - TB Davies, Thukela Banks, Apr 2008 - 3 days benthic grab sampling
  - Ocean Stroom, Thukela Banks, Aug 2005 - 1 day - relocate two bull sharks
  - Ocean Stroom, Illovo Banks, Aug 2004 - 1 day - specimen collection
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## REFEREES

**Mr Jonathan Moores** | Regional Manager | NIWA, Auckland (current manager)  
Contact: +64 27 233 7871 | [Jonathan.Moores@niwa.co.nz](mailto:Jonathan.Moores@niwa.co.nz)

**Dr Alison MacDiarmid** | Regional Manager | NIWA, Wellington  
Contact: +64 274 033 468 | [Alison.MacDiarmid@niwa.co.nz](mailto:Alison.MacDiarmid@niwa.co.nz)

**Dr Richard Saunders** | Impact & Engagement Officer | IMOS, Tasmania  
Contact: +61 483 350 831 | [Richard.Saunders@utas.edu.au](mailto:Richard.Saunders@utas.edu.au)

**Dr Paul de Bruyn** | Science Manager | Indian Ocean Tuna Commission, Seychelles  
Contact: +34 671 57 31 13 | [paul.debruyn@fao.org](mailto:paul.debruyn@fao.org)

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## SELECTED PUBLICATIONS

Publication summary: 19 peer-reviewed journal articles, 1 book section, 2 theses, 2 conference proceedings, 76 unpublished reports, 18 oral presentations, 2 posters, 16 popular articles

### ***Journal***

Maggs JQ, Hartill BW, Evans O, Holdsworth J, Lumley T. in prep. Anatomical hooking location and capture depth lower survival probability in snapper *Chrysophrys auratus* caught by recreational fishers. *Fisheries Research*.

Goetze J, Heithaus MR, MacNeil MA, [...], Maggs JQ, [...]. in prep. Management diversity is the best approach for the conservation of reef sharks.

Simpfendorfer CA, Heithaus MR, Heupel MR, [...], Maggs JQ, [...], Chapman D. 2023. Widespread diversity deficits of coral reef sharks and rays. *Science* 380: 1155-1160.

Mann BQ, Maggs JQ, Porter SN, Dalton WN. 2022. Monitoring the effects of spatial protection on the reef fish communities of the Pondoland Marine Protected Area, Eastern Cape Province, South Africa. *African Journal of Marine Science* 44(2): 1-17.

Dames V, Bernard ATF, Floros C, Mann B, Speed C, Maggs J, Laing S, Meekan M, Olbers J. 2020. Zonation and reef size significantly influence fish population structure in an established marine protected area, iSimangaliso Wetland Park, South Africa. *Ocean & Coastal Management* 185: 105040.

MacNeil MA, Chapman D, Heupel M, [...], Maggs JQ. 2020. Global status and conservation potential of reef sharks. *Nature* 583: 801-806.

Dames V, Bernard A, Floros C, Mann B, Speed C, Maggs J, Laing S, Meekan M, Olbers J. 2020. Zonation and reef size significantly influence fish population structure in an established marine protected area, iSimangaliso Wetland Park, South Africa. *Ocean and Coastal Management* 185:105040.

Heyns-Veale ER, Bernard ATF, Götz A, Mann BQ, Maggs JQ, Smith MKS. 2019. Community-wide effects of protection reveal insights into marine protected area effectiveness for reef fish. *Marine Ecology Progress Series* 620: 99-117.

Maggs JQ, Cowley PD, Porter SN, Childs AR. 2019. Should I stay or should I go? Intra-population variability in movement behaviour of wide-ranging and resident coastal fishes. *Marine Ecology Progress Series* 619: 111-124.

Murray TS, Cowley PD, Mann BQ, Maggs JQ, Gouws G. 2019. Movement patterns of an endemic South African sparid, the black musselcracker *Cymatoceps nasutus*, determined using mark-recapture methods. *African Journal of Marine Science* 41(1): 71-81.

Mann BQ, Winker H, Maggs JQ, Porter S. 2016. Monitoring the recovery of a previously exploited surf-zone fish community in the St Lucia Marine Reserve, South Africa, using a no-take sanctuary area as a benchmark. *African Journal of Marine Science* 38(3): 423-441.

Maggs JQ, Cowley PD. 2016. Nine decades of fish movement research in southern Africa: a synthesis of research and findings from 1928 to 2014. *Reviews in Fish Biology and Fisheries* 26(3): 287-302.

Maggs JQ, Mann BQ, Potts WM, Dunlop SW. 2015. Traditional management strategies fail to arrest a decline in the CPUE of an iconic marine recreational fishery species with evidence of hyperstability. *Fisheries Management and Ecology* 23(3-4): 187-199.

Dunlop SW, Mann BQ, Cowley PD, Murray TS, Maggs JQ. 2015. Movement patterns of *Lichia amia* (Teleostei: Carangidae): results from a long-term cooperative tagging project in South Africa. *African Journal of Zoology* 50(3): 249-257.

Mann BQ, Maggs JQ, Khumalo MC, Khumalo D, Parak O, Wood J, Bachoo S. 2015. KwaZulu-Natal Boat Launch Site Monitoring System: A novel approach for improved management of small vessels in the coastal zone. *Ocean and Coastal Management* 104(2015): 57-64.

Floros C, Schleyer MH, Maggs JQ. 2013. Fish as indicators of diving and fishing pressure on high-latitude coral reefs. *Ocean and Coastal Management* 84: 130-139.

Maggs JQ, Mann BQ, Cowley PD. 2013. Reef fish display station-keeping and ranging behaviour in the Pondoland

Marine Protected Area on the east coast of South Africa. *African Journal of Marine Science* 35(2): 183-193.

Maggs JQ, Mann BQ, Cowley PD. 2013. The contribution of a large no-take area to the management of four heavily exploited near-shore linefish species along the south-east African coast. *Fisheries Research* 144(2013): 38-47.

Floros C, Schleyer MH, Maggs JQ, Celliers L. 2012. Baseline assessment of high-latitude coral reef fish communities in southern Africa. *African Journal of Marine Science* 34(1): 55-69.

Maggs JQ, Mann BQ, van der Elst RP. 2012. Long-term trends in the management of the recreational shore-fishery for elf (*Pomatomus saltatrix*: Pomatomidae) in KwaZulu-Natal, South Africa. *African Journal of Marine Science* 34(3): 401-410.

Mann BQ, Pradervand, P, Maggs JQ, Wintner S. 2012. A characterisation of the paddle-ski fishery in KwaZulu-Natal, South Africa. *African Journal of Marine Science* 34(1): 119-130.

Maggs JQ, Floros C, Pereira MAM, Schleyer MH. 2010. Rapid visual assessment of fish communities on selected reefs in the Bazaruto Archipelago. *Western Indian Ocean Journal of Marine Science* 9(1): 115-134.

### **Book section**

Maggs JQ. 2014. Game fish migrations. In: Goble BJ, van der Elst RP and Oellerman LK (eds). Ugu Lwethu - Our coast: a profile of coastal KwaZulu-Natal. Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, Cedara, p87.

### **Selected reports**

Maggs JQ, Hartill BW, Evans O, Holdsworth J, Lumley T, Stevens T. accepted. Mortality rates of snapper released by recreational fishers. *New Zealand Fisheries Assessment Report 2023/xx*. xx p

Maggs JQ, Parsons D. 2023. Design for catch sampling programme to estimate the age structure of New Zealand hāpuku (*Polyprion oxygeneios*). *New Zealand Fisheries Assessment Report 2023/34*. 30 p

Maggs JQ, Davey NK, Hartill BW. 2023. Monitoring the Kaikōura and Motunau boat-based marine amateur fisheries for blue cod, sea perch and rock lobster, 2021-22. *New Zealand Fisheries Assessment Report 2023/33*. 53 p

Maggs JQ. 2022. Bottom trawling by the vessel FV Chips in relation to the Napier Port Offshore Disposal Area. NIWA Client Report 2022199AK: 42.

Schnabel KE, Mills VS, Tracey DM, Macpherson D, Kelly M, Peart RA, Maggs J, Yeoman J, Wood CR. 2021. Identification of benthic invertebrate samples from research trawls and observer trips, 2020/21. Ministry for Primary Industries, Wellington: 51 pp (New Zealand Aquatic Environment and Biodiversity Report No. 269).

Maggs J, Parker D, Kerwath S, Attwood C, da Silva C, Winker H. 2017. The 2017 assessment of slinger (*Chrysoblephus puniceus*) for the South African linefishery. Report of the Linefish Scientific Working Group, LSWG No. 01, 2017: 27 pp.

Maggs JQ, Mann BQ, Els M, Khumalo D, Mselegu X. 2017. National Marine Linefish System: KZN recreational fisheries monitoring data collection by Ezemvelo KZN Wildlife: 2016 Annual Report. Oceanographic Research Institute, Durban: 60pp. (ORI Unpublished Report 342).

Maggs JQ and Mann BQ. 2016. Pondoland Marine Protected Area: Ten years (2006-2016) of monitoring the effectiveness of the Pondoland MPA in protecting offshore reef-fish. Oceanographic Research Institute, Durban: 27 pp. (ORI Unpublished Report 329).

Maggs JQ, Dunlop SD, Mann BQ. 2012. National Marine Linefish System: A snapshot evaluation of recreational data collection by Ezemvelo KwaZulu-Natal Wildlife during 2009 and 2010 with recommendations for improvement. Oceanographic Research Institute, Durban: 39pp. (ORI Unpublished Report 296).

### **Selected oral presentations**

Freeman D, Ford R, Funnell G, Geange S, Maggs J, Nutsford C, Riding T, Sharp B, Tellier P, Tunley KL. 2019. Building an information base for science-based marine protection. New Zealand Marine Sciences Society Conference, 2-5 July 2019, Dunedin, New Zealand. Oral presentation.

Maggs JQ, Cowley PD, Porter SN, Mann BQ. 2017. From resident to migrant: an empirical classification of coastal fish movement in South Africa. South African Marine Science Symposium, 4-7 July 2017, Boardwalk Convention

Centre, Port Elizabeth, South Africa. Oral presentation.

Maggs JQ, Cowley PD. 2015. Tracking movement of important marine and estuarine fish species in South Africa: a synthesis of research and findings. 9th WIOMSA Scientific Symposium, 26-31 October 2015, Wild Coast Sun Resort, Eastern Cape, South Africa. Oral presentation.

Maggs JQ, Mann BQ, Potts WM, Dunlop SW. 2014. Long-term declines in CPUE of an iconic recreational species along the South African east coast. 15th Southern African Marine Science Symposium, 15-18 July 2014, Stellenbosch. Oral presentation.

Maggs JQ, Mann BQ, Cowley PD. 2012. Pondoland Marine Protected Area: indirect effects of protection on the wider fish community. Symposium of Contemporary Conservation Practice, Fern Hill, Pietermaritzburg, 22-26 October 2012. Oral presentation.

Maggs JQ, Mann BQ. 2012. National Marine Linefish System: Collecting catch and effort data in KwaZulu-Natal. Cape Nature MPAs, Islands and Estuaries Forum, 14 June 2012. Oral presentation.

Maggs JQ, Mann BQ, Cowley PD. 2012. Fish movements in the Pondoland Marine Protected Area: balancing conservation and fisheries enhancement. The 4th Line-fish Symposium, Geelbek, Langebaan, 16-20 April 2012. Oral presentation.

Maggs JQ, Mann BQ, Cowley PD. 2011. Rebuilding depleted line-fish stocks in the Pondoland Marine Protected Area and adjacent fisheries. The 14th South African Marine Science Symposium, 4-7 April 2011, Rhodes University, Grahamstown. Oral Presentation.