

# Dr Jade Quinton Maggs

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I am a Fisheries Scientist with 15 years of experience and a strong track record in collaborative research. I currently work in the Wild Fisheries Flagship Programme at Earth Sciences New Zealand (formerly NIWA), where I am the Group Manager for the Modelling & Recreational Fisheries team. I lead national boat ramp creel surveys of the recreational fishery, with a focus on harvest estimation for inshore fin-fish and rock lobster fisheries. In 2017, I earned a PhD in Fisheries Science from Rhodes University in South Africa. My expertise also includes data management and GIS, and I have lectured part-time at postgraduate level on fishery stock assessment and R programming.

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## Professional Experience

### **EARTH SCIENCES NEW ZEALAND** (formerly NIWA)

Fisheries Scientist | Group Manager

*Jan 2022 – present*

- Group manager - Modelling and Recreational Fisheries
- Project leader for national boat ramp creel surveys of the recreational fishery and other projects
- Fisheries modelling (GLM, CPUE standardisation, harvest estimation, recreational release mortality)
- Member of the Marine Amateur Fisheries and Inshore Fisheries Assessment working groups
- Using R, PostgreSQL, Linux, QGIS, GitLab
- Leading implementation of electronic data acquisition and streamlining workflows
- Selected for in-house Leadership Development Programme

Group Manager – Fisheries Data Services

*Apr 2020 – Dec 2021*

- Managed all fisheries data from research and observer programmes for NIWA and the Ministry for Primary Industries
- Managed commercial rock lobster catch sampling project
- Led development of data loading software and PostgreSQL databases
- Managed a team of six staff
- Used R, PostgreSQL, Linux, QGIS, GitLab
- Delivered efficiencies and significant improvements across multiple workflows

### **MINISTRY FOR PRIMARY INDUSTRIES**

Senior Analyst – Fisheries Management

*Jan 2019 – Mar 2020*

- Contributed to the development of ecosystem-based fisheries management approaches
- Member of the Marine Protected Area (MPA) Science Advisory Group
- Engaged with stakeholders on proposed MPA networks, including those affecting commercial rock lobster fisheries

### **OCEANOGRAPHIC RESEARCH INSTITUTE** (South Africa)

Scientist *Jun 2018 – Dec 2018*

Assistant Scientist *Aug 2011 – May 2018*

Senior Scientific Technician *Jul 2008 – Jul 2011*

Scientific Technician *May 2006 – Jun 2008*

- Led recreational fisheries surveys (shore- and boat-based)
- Fisheries modelling, including GLMs, CPUE standardisation, and fish movement analysis
- Field surveys to monitor relative abundance, movement, and community composition of fishes
- Delivered postgraduate lectures on fisheries stock assessment and R programming
- Performed biological sampling of commercial fish species
- Developed and administered fisheries monitoring databases using PostgreSQL
- Member of the Linefish Scientific Working Group
- Managed a team of three staff and a research aquarium laboratory

## **uSHAKA SEA WORLD** (South Africa)

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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## **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 |  $\LaTeX$
  - **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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## **Technical Courses Attended**

- Zonation decision support software training (NIWA, Sep 2019)
  - Ecofish stock assessment interpretation (Dept. of Agriculture, Forestry and Fisheries, Apr 2017)
  - Introduction to  $\LaTeX$  (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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## **Referees**

**Dr Darren Parsons** | Principal Scientist - Marine Ecology | Earth Sciences NZ, Auckland

Contact: +64 21 170 1724 | [Darren.Parsons@niwa.co.nz](mailto:Darren.Parsons@niwa.co.nz)

**Dr Richard Saunders** | Impact & Engagement Officer | Integrated Marine Observing System, Hobart

Contact: +61 483 350 831 | [Richard.Saunders@utas.edu.au](mailto:Richard.Saunders@utas.edu.au)

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## Publications

Career summary: 24 peer-reviewed journal articles, 21 working group presentations, 1 book section, 2 theses, 2 conference proceedings, 81 reports, 22 conference presentations, 2 posters, 16 popular articles

### Selected publications - chronologically

- Maggs JQ, Holdsworth JC, Curtis S, Evans OE, Bodie CEH, Madden BK. *submitted*. Estimating total post-release mortality in New Zealand's largest recreational fishery. *Fisheries Management and Ecology*.
- Martinez S, Bernard ATF, Speed CW, Mann BQ, Olbers JM, Maggs JQ, Floros C, Meekan MG, Yon A. 2024. Elasmobranch assemblage structure on protected high-latitude coral reefs of southeast Africa. *Marine Ecology Progress Series* 749: 87-107. <https://doi.org/10.3354/meps14717>
- Smallwood CB, Ryan KL, Flanagan EA, Maggs JQ, Ochwada-Doyle FA, Tracey SR. 2024. Spiny lobster recreational fisheries in Australia and New Zealand: An overview of regulations, monitoring, assessment and management. *Fisheries Research* 280: 107149. <https://doi.org/10.1016/j.fishres.2024.107149>
- Goetze J, Heithaus MR, MacNeil MA, [...], Maggs JQ, [...]. 2024. Directed conservation of the world's reef sharks and rays. *Nature Ecology & Evolution* 8: 1118-1128. <https://doi.org/10.1038/s41559-024-02386-9>
- Maggs JQ, Evans O, Holdsworth JC, Lumley T, Hartill BW. 2024. Post-release mortality of line-caught snapper *Chrysophrys auratus* depends on hook site and capture depth. *Fisheries Management and Ecology* 31(4): e12702. <https://doi.org/10.1111/fme.12702>
- Johnson KS, Maggs JQ, Taylor R, Evans OE, Armiger H. 2024. Estimation of recreational harvest of red and packhorse rock lobster in the CRA 1 area (2022-23). *New Zealand Fisheries Assessment Report* 2024/54. 21 p. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25792>
- Maggs JQ, Evans OE, Taylor R, Armiger H, Marsh C, Hartill BW. 2024. Monitoring of recreational harvest of red rock lobster *Jasus edwardsii* in CRA 2. *New Zealand Fisheries Assessment Report* 2024/52. 41 p. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25801>
- Maggs JQ, Armiger H, Evans O, Taylor R, Davey N, Payne G, Miller A, Spong K, Parkinson D, Bian R, Hartill BW. 2024. Trends in recreational boat effort and harvest from 2004-05 to 2022-23. *New Zealand Fisheries Assessment Report* 2024/53. 60 p. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25806>
- Davey NK, Johnson KS, Maggs JQ. 2024. Mean weight estimates for recreational fisheries in 2022-23. *New Zealand Fisheries Assessment Report* 2024/28. 39 p. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25758>
- Maggs JQ, Parsons D. 2023. Design for catch sampling programme to estimate the age structure of New Zealand hāpuku (*Polyprius oxygeneios*). *New Zealand Fisheries Assessment Report* 2023/34. 30 p. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25522>
- 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. <https://fs.fish.govt.nz/Page.aspx?pk=113&dk=25548>
- Simpfendorfer CA, Heithaus MR, Heupel MR, [...], Maggs JQ, [...], Chapman D. 2023. Widespread diversity deficits of coral reef sharks and rays. *Science* 380: 1155-1160. <https://doi.org/10.1126/science.ade4884>
- 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. <https://doi.org/10.2989/1814232X.2022.2047782>
- 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. <https://doi.org/10.1016/j.ocecoaman.2019.105040>
- MacNeil MA, Chapman D, Heupel M, [...], Maggs JQ. 2020. Global status and conservation potential of reef sharks. *Nature* 583: 801-806. <https://doi.org/10.1038/s41586-020-2519-y>
- 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. <http://dx.doi.org/10.2989/1814232X.2019.1574238>
- 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. <https://doi.org/10.3354/meps12953>
- 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. <http://dx.doi.org/10.3354/meps12970>
- 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, 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. <http://dx.doi.org/10.1111/fme.12125>
- 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. <https://doi.org/10.1007/>

- 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. <https://doi.org/10.2989/1814232X.2016.1224779>
- 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. <https://doi.org/10.1016/j.ocecoaman.2014.12.003>
- 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. <http://dx.doi.org/10.1080/15627020.2015.1058724>
- 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. <https://doi.org/10.1016/j.fishres.2012.10.003>
- 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. <https://doi.org/10.2989/1814232X.2013.798152>
- 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. <https://doi.org/10.1016/j.ocecoaman.2013.08.005>
- 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. <http://dx.doi.org/10.2989/1814232X.2012.709959>
- 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. <https://doi.org/10.2989/1814232X.2012.675120>
- 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. <http://dx.doi.org/10.2989/1814232X.2012.673284>
- 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.
- 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.
- Maggs JQ. 2022. Bottom trawling by the vessel FV Chips in relation to the Napier Port Offshore Disposal Area. NIWA Client Report 2022199AK: 42.
- 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, 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).