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TOWARDS REALISING THE POTENTIAL OF AQUACULTURE AND FISHERIES AS A BENEFICIAL USE OF WATER

Peter Britz and Qurban Rouhani

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Aquaculture and Fisheries not promoted as a beneficial use of water



💧 Lack of Policy and Legislation

- 💧 Water Act – silent on fisheries access, rights and management, aquaculture operational guidelines 2007
- 💧 Provincial nature conservation ordinances – fishing permits linked to conservation and NEMBA objectives
- 💧 Agriculture - no legislation; DAFF given mandate, draft aquaculture policy, nothing yet for inland fisheries



To achieve equitable access and economically efficient development, government facilitated development interventions are required



Anot

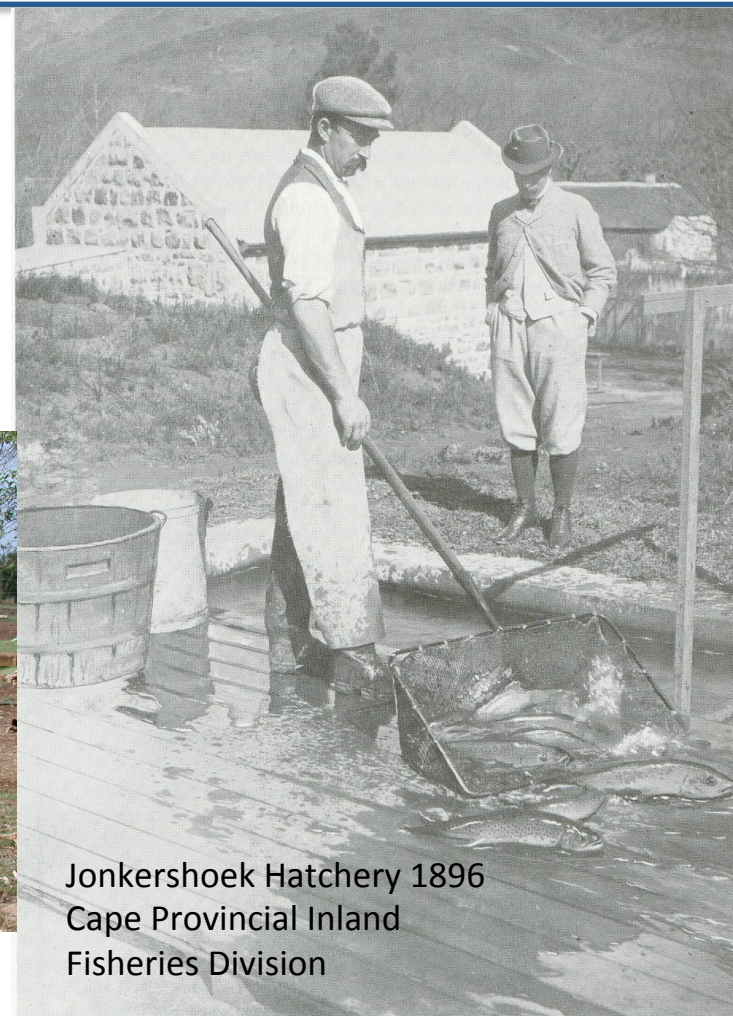
Photo: Olaf Weyl

Decline in Inland Fishery Management Capacity and Closure of State Hatcheries

- Nature Conservation policy changed in 1980's away from aquaculture and stocking alien fish
- Provincial Hatcheries ceased operations
- Apartheid era homeland food security aquaculture projects became dysfunctional



*Democratic era post-1994 policy vacuum
in respect of both inland aquaculture and
fisheries*



Mr John L. Scott sorting brown trout at the Jonkershoek Hatchery in 1896, watched by the landlord, Mr J. C. Watermeyer.

Imperatives to create rural food security and livelihoods and produce more fish



- 💧 Global fishery production peaked – aquaculture fastest growing animal production sector at 8.5% p.a.
- 💧 African per capita fish consumption declining
- 💧 40% of SA rural households food insecure
- 💧 SA agriculture policy to diversify, create livelihood opportunities to promote rural food security, small farmers – “the missing middle”



Post-2000 emerging policy and strategy in respect of Aquaculture as an agricultural activity, but still no home for inland fisheries



WRC support for Aquaculture



WRC Initiates Aquaculture Projects 2003/4:

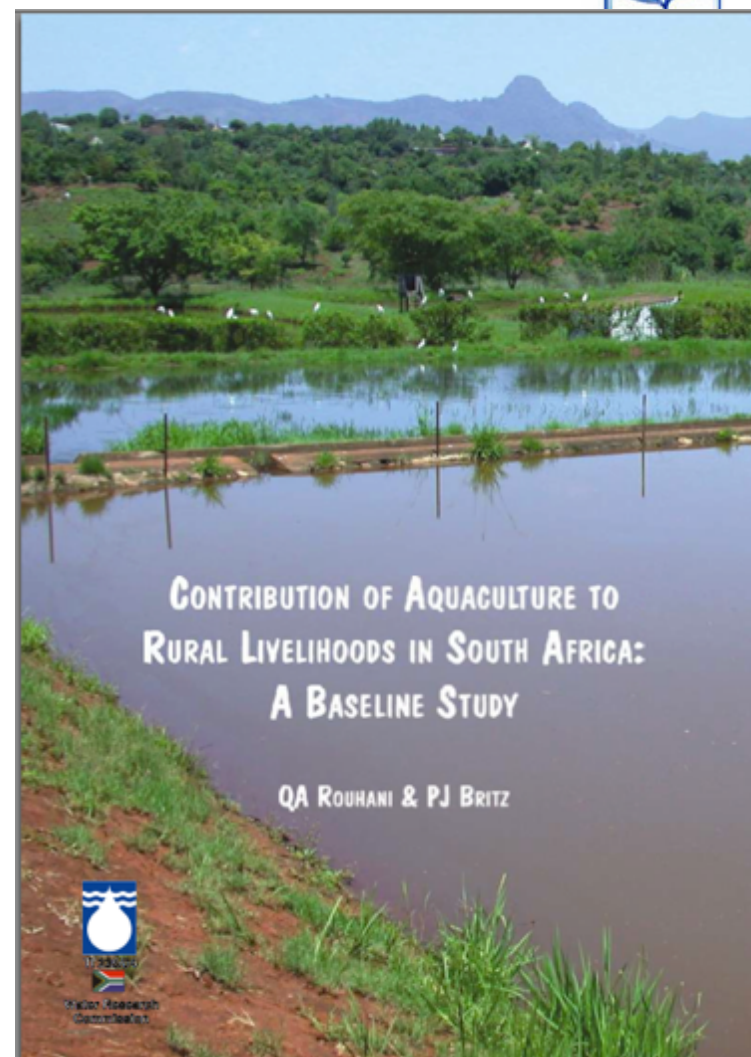
- 💧 Water Quality, Production and Fish Health Small-Scale Rainbow Trout Farmers in Net Cages on Irrigation Dams. Stellenbosch University
- 💧 Baseline survey of contribution of aquaculture to rural livelihoods. Rhodes University

Britz, P.J, and Rouhani, Q. 2004 Contribution of Aquaculture to Rural Livelihoods in South Africa: A Baseline Study. WRC Report TT 235/04

Salie, K; Resoort, D;. du Plessis, D.; and Maleri, M. 2008 Training Manual for Small-Scale Rainbow Trout Farmers in Net Cages on Irrigation Dams: Water Quality, Production and Fish Health. WRC Report TT 369/08

File name

7-Sep-11



WRC Aquaculture Baseline Survey



Key Findings:

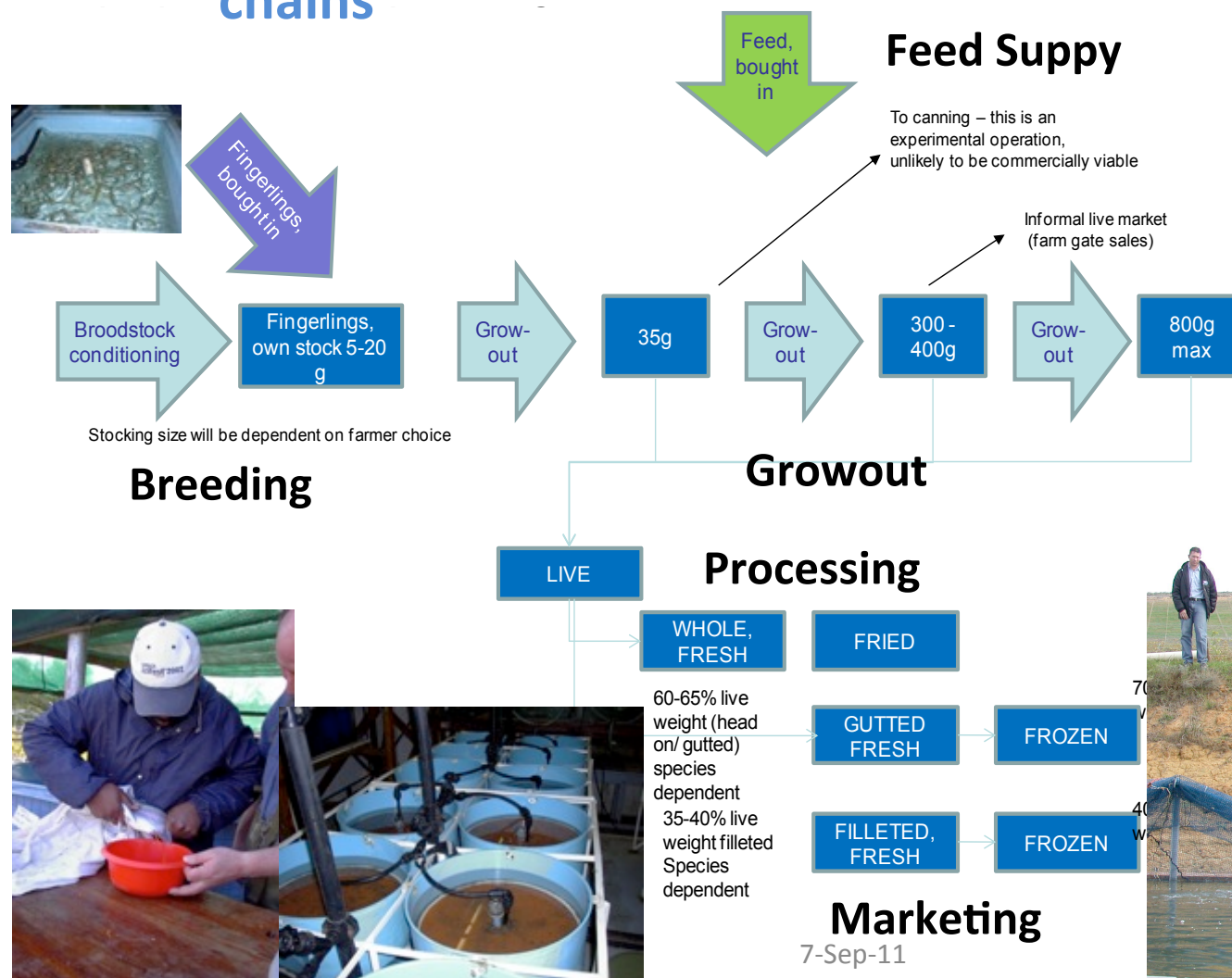
- 💧 Rural aquaculture contribution negligible
- 💧 Subsistence level aquaculture not viable – many failed government projects
- 💧 Fisheries have potential to develop rural livelihoods – recommended DAFF take on mandate



But some hope for promoting emerging farmers to do aquaculture

WRC Baseline Survey of Rural Aquaculture

Emerging small farmers need to be linked to value chains



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WRC Aquaculture Baseline Survey



💧 Comprehensive state support required to establish small scale aquaculture:



- 💧 PPP arrangements to link farmers to value chains
- 💧 Revitalisation of hatcheries as service hubs
- 💧 Extension, training, technology transfer



Next step: WRC Provincial aquaculture programme using PAR methodology 2005-2010



Outcomes of Provincial Aquaculture Programme

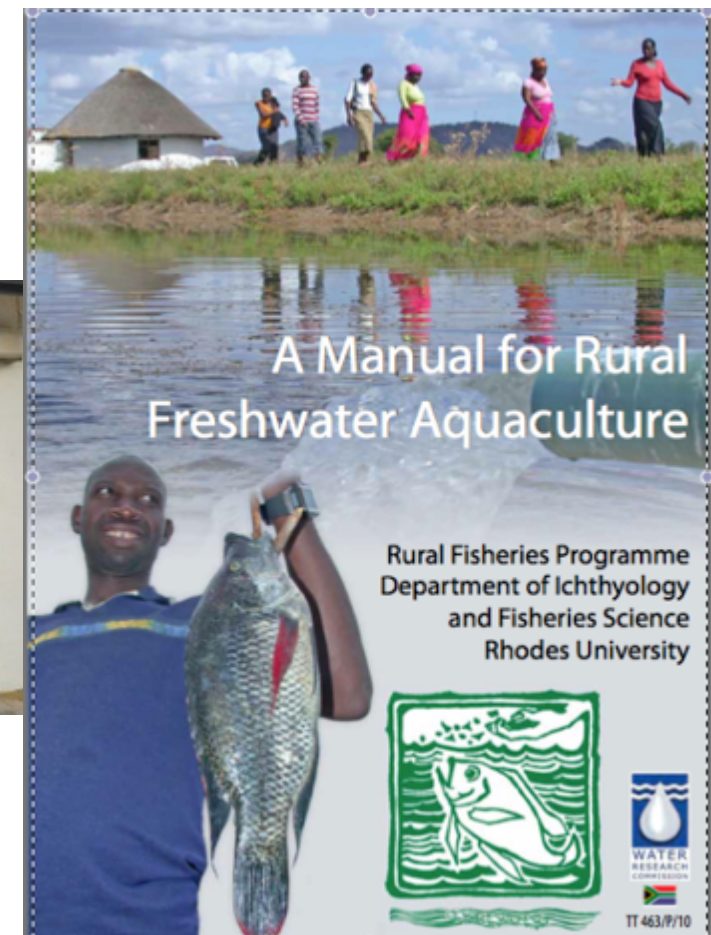


- 💧 Facilitated development of 7 provincial aquaculture strategies
- 💧 Aquaculture training course and manual for provincial staff
- 💧 Revitalisation of Turfloop and Amalinda Hatcheries
- 💧 Linkage of DAFF support to provinces
- 💧 Inputs into National Aquaculture Strategy
 - 💧 PPP approach
 - 💧 Aquaculture development zones



Main constraint organisational problems with Provincial Depts – suitable agent to promote sector development?

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WRC Inland Fishery Project – DAFF co-funding 2010-2014



agriculture,
forestry & fisheries
Department:
Agriculture, forestry & fisheries
REPUBLIC OF SOUTH AFRICA



💧 Transdisciplinary approach:



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💧 Fisheries scientists:

Peter Britz, Qurban Rouhani, Rhodes University
Dept Ichthyology & Fisheries Science



Olaf Weyl, South African Institute for Aquatic
Biodiversity



💧 Governance expert

Mafa Hara, PLAAS-University of the Western Cape



💧 Social scientist

Barbara Tapela, African Centre for Water Research



Another project sponsored by www.wrc.org.za

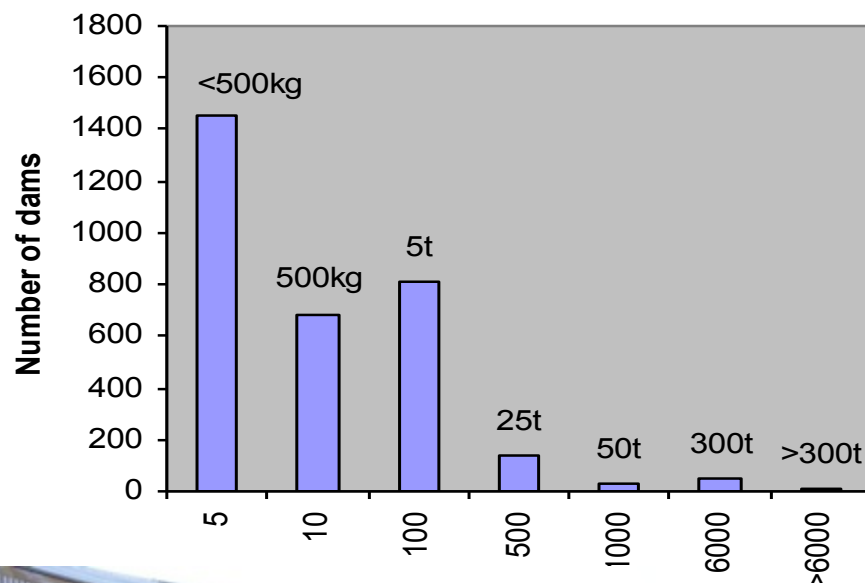
WRC Project Focus Areas



- 💧 Impoundments (currently not rivers)
- 💧 Indigenous fishing knowledge
- 💧 Production potential of inland fisheries
- 💧 Livelihood opportunities – development interventions
- 💧 Governance arrangements, particularly access rights



Inland Fisheries Potential



- 3000 km² mainly scattered small dams
- 15,000t estimated production potential
- Used by recreational and subsistence anglers
- Commercial fishery potential v. limited
- Current utilisation poorly understood
- Many examples of failed development attempt



Photo: Olaf Weyl

***Livelihood development
requires assessment, policy,
rights, management capacity***

WRC Inland Fishery Scoping Project



- 💧 *Indigenous fishing knowledge* restricted to few sites where tradition unbroken e.g. Phongola floodplain
- 💧 Subsistence fishing often a recent activity – reflects Apartheid relocation, urbanisation, adaptation of livelihoods - *local knowledge*



Subsistence fishers lack formal rights – often criminalised
No rights = no opportunity = no development + conflict



Photo: Olaf Weyl



No Rights Policy = Recipe for Conflict



Pongola Poort Dam example

Recreational Fishing Charters
Versus
Local fishers



Quantifying Fisheries Socio-economic contribution

Lake Gariep subsistence

- High unemployment rate (58%)
- 57 % “fishing households”
- 450 participants
- 50 tons per annum of carp @ R6/kg
- Low revenue but high livelihoods contribution

Lake Gariep recreational

- Target carp (ca. 30 tons/yr)
- 7.5 tons caught during competitions
- **R525/angler/night & > R 500 K/year**
- Value was **R70/kg** of fish
- High economic impact low harvest



Ellender et al., (2010) Quantifying the annual fish harvest from South Africa's largest freshwater reservoir. Water SA

Developing Management tools

Dam	Size (ha)	Yield (t/yr)	Pot. Empl.	Utili- sation	Red List	Tourist value	Comm. land	Recom- mend
Bospoort	379	35-88	51	R/S	No	No	Yes	MCF
Koster	262	12-23	13	R	No	Med	No	RF
Lindleyspoort	180	7-15	9	R/S	No	High	No	RF
Lotlamoreng	35	5-12	7	S	No	Med	Yes	OAE
Madikwe	431	37-60	34	R/S	No	No	Yes	MCF
Molatedi	755	20-45	26	R/S/C	No	High	Yes	MCF/RF
Ngotwane	401	27-54	31	S	No	Med	Yes	MCF
Roodekopjes	1571	187-291	168	R/S	No	High	Yes	RF/CF
Taung	465	17-42	24	S	Yes	High	Yes	RF
Vaalkop	1111	113-210	121	R/S	No	High	No	RF

Weyl et al.(2007) The need for inland fisheries policy in South Africa: a case study of the North West Province. Water SA. 33(4): 497-504.

Recreational Fishery – Huge Economy



- 💧 Participation
100's
thousands
- 💧 Potential
LED income
- 💧 How to
create local
livelihoods?



Recreational fishing can create livelihoods

Cata community
flyfishing project,
Keiskammahoek,
Eastern Cape

*Applying principle of
“Common Pool
Resource”*



Won UN 2010 Award for Environmental
Entrepreneurship



Another project sponsored by www.wrc.org.za

Towards Governance Arrangements



- 💧 Consultative process underway with stakeholders
- 💧 Need Policy on a rights framework aligned with DAFF development goals
- 💧 Probably need an Inland Fishery Act to empower the Minister of DAFF to issue exclusive rights and manage inland fisheries for development



Conclusions



- 💧 WRC projects in partnership with DAFF have directly supported the development of national and provincial Government capacity to manage inland aquaculture and fisheries
- 💧 Outlined conceptual approaches to developing aquaculture and fisheries to promote rural livelihoods and food security
- 💧 Contributed to policy formation and implementation strategy
- 💧 Developed management tools
- 💧 Built provincial government capacity



Acknowledgements:

WRC project partners

Olaf Weyl, South African Institute for Aquatic Biodiversity

Gerhardt Backeberg, WRC Water Utilisation in Agriculture

