An Evolving Partnership:
Collaboration between university 'experts' and net-fishers

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Most academic institutions the world over are engaged in some form of community outreach activity, known variously as service learning, social outreach, community development and social responsiveness (Bringle & Hatcher 2002; Martin et al. 2005; Muirhead & Woolcock 2008; Onyx 2008). Although initially considered to be a service function, with a strong focus on providing expert knowledge to society (Benson et al. 2000; Martin et al. 2005; Bringle & Hatcher 2002), increasingly universities have recognised the importance and value of such university-community partnerships for contributing to scholarship, enriching the research and learning experience and linking theoretical ideas to societal problems at a local level (Vickers et al. 2004; Buys & Bursnall 2007; Oldfield 2007). There is also a growing realisation that addressing social and environmental problems is beyond the capabilities and resources of a single organisation. The university, with its diverse range of disciplines and areas of expertise and resources, should be a key player in such

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collaborative problem-solving efforts (Martin et al. 2005, Muirhead & Woolcock 2008). Indeed, worldwide, there has been an increased interest in developing and nurturing such university-community partnerships (Sherrod 1999; Buys & Bursnall 2007; Muirhead & Woolcock 2008).

Given the growth of literature in this field, it would appear that universities and communities are creating innovative collaborations at an exponential rate (Martin et al. 2005) and, furthermore, that the future of these partnerships is set to become an integral component of the university enterprise. Buys and Bursnall (2007) argue that universities need to shift their thinking about university-community partnerships from one that views partnerships as secondary to teaching and research to one that places them central to their mission. These partnerships have the potential to lead to innovative programs and new forms of knowledge that can influence policies and address societal problems. Oldfield takes this idea further, claiming 'formal academic production of knowledge is impoverished without broader community engagement' (Oldfield 2007, p. 108).

The University of Cape Town (UCT) has had a strong history of community engagement and development, especially given South Africa's racially oppressive socio-political past. However, over the past 10–15 years, UCT has elevated the importance of this commitment to community engagement by developing a Social Responsive Policy Framework and a University Social Responsiveness Committee, and in 2004 UCT launched its first annual social responsiveness report (http://www.uct.ac.za/services/ip/sr/anualrpts/). Furthermore, UCT has included social responsiveness as a performance indicator in academic appraisal processes (UCT 2009). Academics, however, remain reluctant to acknowledge the scholarly value of these collaborative university-community engagements unless outputs are presented in academic publications.

The Environmental Evaluation Unit (EEU), based at UCT, has a long history of community engagement. Established in 1985 in response to the growing need for research and training services in the environmental assessment and management field, it became increasing involved in policy-related research and community

outreach activities during the transition to democracy. During this period, the EEU found itself increasingly called upon by non-governmental organisations (NGOs) and community groups to provide advice on the environmental and social justice dimensions facing poor communities (for example, proximity of new housing development to polluted stormwater canals, impacts of open cast mining, poor living conditions in low-income housing; see: http://www.eeu.uct.ac.za/).

This article reports on the Ebenhaeser net-fisheries project, a community-university partnership project that has been ongoing since 1993. It provides an overview of the evolution of the partnership process and highlights key activities and outcomes of the different phases of the partnership process. The article discusses important aspects of the research but its purpose is not to provide a review and assessment of research findings and outcomes (reference to research results and outcomes are provided throughout, however). Rather, the main focus is on the shift in perceptions, research approaches and university researchers' roles in response to changing government policies and management regimes. As the researchers' understanding of the fishery system (Charles 2001) – that is, the bio-physical, socio-economic and institutional dimensions – deepened, and as the partnership strengthened, the partners were able to work collaboratively to seek solutions to immediate concerns but more importantly to strategise and act in the face of changing government policies and plans. What is most striking about this partnership process is that the changes that have taken place over the lifespan of this project have mirrored the changing perspectives and directions in the small-scale fisheries literature (Berkes et al. 2001, 2003; McConney & Charles 2008).

The Environmental Evaluation Unit: Ebenhaeser partnership

Background to the fisher community

The Olifants estuary, one of the largest in the country, comprises a unique and productive ecosystem located on the west coast of South Africa, approximately 350 km north of Cape Town (Figure 1). The fishing communities that utilise this estuary have a long history of fishing in the estuary (Sowman 2003). The community consists of descendents of families evicted from fertile agricultural land near

Lutzville (Figure 1) in 1925 due to historic discriminatory policies and laws. Upon relocation to the lower reaches of the Olifants River, these fishing communities situated at Papendorp, Olifantsdrif, Ebenhaeser, Rooierwe and Nuwepos, shifted their subsistence activities from farming to fishing (Sowman et al. 1997). Fishing for harders, Liza richardsonii, in the estuary, using rowing boats and gillnets, has continued to the present time and the local fishing communities, known collectively as Ebenhaeser, largely subsist from the harder resource, although they sell their catches to farmers from the surrounding areas, particularly in the summer months when catches are good. Excess catch is also salted and dried and used as a source of food during the winter months.

There are at present approximately 150 families involved in fishing on the estuary, although only 45 exemption permits have been issued by the fisheries management authority. Each permit holder is allowed one crewmember, which means there are a total of 90 'legal' fishers. In general terms, the fishing families of Ebenhaeser are considered poor, with a mean monthly income per fisher family ranging from 378–570 Rands (US$53–80) (Carvalho et al. 2009). While there is a core of fishers who engage in fishing whenever conditions are suitable, many other fishers will seek alternative employment, which is often seasonal, such as grape picking, or ad hoc, such as road maintenance, to supplement their livelihoods.

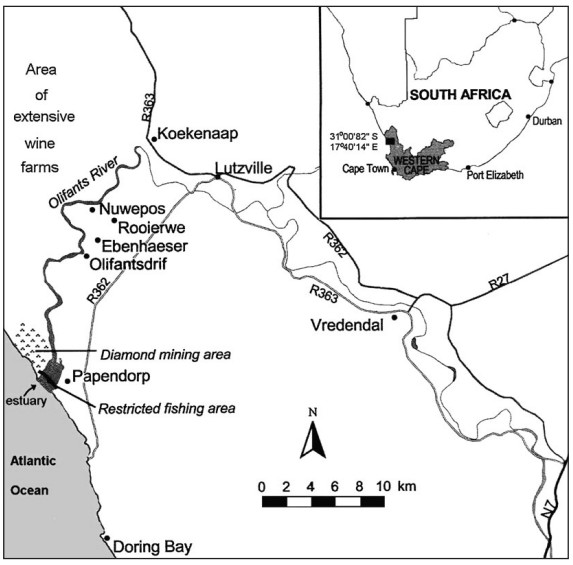


Figure 1. The location of Olifants River Estuary and adjacent fishing communities, Western Cape, South Africa

Initial engagement (1993-1998)

The fishers of Ebenhaeser first approached the EEU in 1993 due to concerns about the presence of diamond recovery vessels in the estuary, which they blamed for a perceived decline in fish catches during the early 1990s. After several meetings and a preliminary assessment of the situation by a fisheries biologist (EEU 1993), the EEU initiated a research project with the following objectives: to assess the sustainability of the net-fishery; to develop a community-based monitoring system; to ascertain the fishers' levels of dependence on the resource and facilitate the development of a co-management system for the Olifants estuary harder fishery (Sowman et al. 1997). Under such a system, the government and the fishers would jointly co-manage the local resource (the estuary harder fishery), sharing rights and responsibility between them (Pomeroy & Berkes 1997; Berkes et al. 2001). These research objectives and methods were agreed upon with the fisher community as well as the provincial fisheries authority at the time, Cape Nature Conservation, who expressed some concerns regarding fishing pressure in the estuary. A number of local community members were trained as resource monitors. Their task was to collect fishery data that could then be used to conduct a stock assessment. Following a series of training sessions at UCT and in the field, the monitors embarked on their work in 1994 and were visited by members of the research team once every six weeks to discuss any problems with data collection.

Another aspect of the research concerned conducting a mesh size experiment to determine the relationship between fish size, catch rate and gillnet mesh sizes at different localities in the river. This experiment was conducted over a five-day period and repeated every two months during the fishing season in 1995 and 1996. Fishers from the community were employed to assist with the experiment. Results from the mesh size experiment showed clearly that catch rate declines markedly with increasing mesh size (Sowman et al. 1997; Sowman & Bergh 2001). For example, an increase in the mesh size from 51mm to 54mm (which is difficult to detect with the naked eye) results in a reduction in catch rate of more than 40 percent. These results were used to negotiate with the authorities a reduction in legal mesh size from 54mm to 51mm, which was the mesh size in place prior to 1993 – when the reduction in catches was first noticed by fishers.

Although there were certain limitations to the community-based monitoring system, the stock assessment undertaken on data obtained for the period 1994 to 1997 did not reveal any decline in catch per unit effort (CPUE) (Sowman 2003; Carvalho et al. 2009). Given the results from the mesh size experiment, the research team recommended additional licences be allocated to the most needy unlicenced fishers, and the increase in fishing effort be closely monitored for possible changes in CPUE.

The second focus of this early engagement was to facilitate the development of co-management arrangements between Cape Nature Conservation (CNC) and the fishers to jointly manage the fishery. This was considered desirable given the fishers' knowledge of and interest in managing the resource, and CNC's limited resources and capacity. The arrangements involved workshops with an elected fisher committee as well as the broader fishing community to build an understanding of co-management principles and practices, and to agree on the principles and elements of such a partnership agreement. It also required regular meetings with CNC to flesh out the details of how this partnership would be implemented. By the end of 1997, a draft partnership agreement had been prepared which outlined the roles and responsibilities of the partners with respect to managing the fishery (Sowman et al. 1999).

However, during this period, South Africa was undergoing a major law reform process and responsibility for marine and estuarine resource management had become a national competence under the authority of Marine and Coastal Management (MCM), a Chief Directorate within the Department of Environmental Affairs and Tourism (DEAT). During this period, there was considerable confusion regarding which government agency was ultimately responsible for the management of estuaries. Without a clear policy, nor a clear government partner with whom to engage, the fledgling co-management arrangements for this fishery collapsed in 1999. During this period of institutional uncertainty, however, the EEU remained in communication with the fishers, responding to specific requests for advice as the new subsistence and small-scale fisheries management system was being developed (Harris et al. 2002).

The middle years (2000–2005)

Once established, the new fisheries management agency MCM planned to significantly reduce the fishing activities in the estuary. This decision was largely based on a national study of the status of the harder resource in South Africa undertaken by MCM scientists; the study suggested that the harder resource was overexploited and recommended a reduction in number of permit holders in oversubscribed areas (Hutchings & Lamberth 2002a). The fishers were informed at a community meeting about the decision to significantly reduce the number of licences issued for net-fishing. However, the presence of a well-organised and informed fisher committee, as well as data on the status of the resource provided by the UCT stock assessment (Sowman & Bergh 2001), and evidence of the community's dependence on these resources for food and livelihoods, meant MCM was unable to impose their decision and had to negotiate access rights and management protocols with the fishers. The outcome of these discussions, which is still in place today, was an agreement that there would be a reduction in fishing pressure and 90 fishers, one permit holder and one crew member, would be accommodated in the fishery. Permit conditions relating to net length, mesh size, bycatch (incidental catch of certain linefish species not targeted by the fishery) and recording of catches were also negotiated.

During this period of transition, the university-community partnership focused on enhancing awareness about fisher rights and responsibilities, as articulated in the new 1996 Constitution of the Republic of South Africa and in various laws relevant to resource management. It also focused on developing individual and institutional capacity to equip fishers to effectively participate in management (EEU & PLAAS 2003a, 2003b). These activities were undertaken in partnership with a research grouping at the University of Western Cape, Program for Land and Agrarian Studies (PLAAS), and were funded through a Norwegian-South African bi-lateral agreement with DEAT-MCM. A secondary focus of this Norwegian funded project was to facilitate the development of co-management arrangements in selected coastal small-scale fisheries, one of which was the Olifants Estuary net-fishery. The community-monitoring program was revitalised and meetings between the new fisheries authority, MCM, and the fisher community were initiated. However,

despite legislative provisions supporting co-management (Hauck & Sowman 2003), and MCM claims to be engaged in co-management processes with the fishers of Ebenhaeser, MCM continued to take decisions on key management issues and rules pertinent to the net-fishery without adequate consultation with the fishers (Sowman 2003; Carvalho et al. 2009). Concerns regarding MCMs top-down and regulatory approach to management were frequently raised at Fisher Committee meetings as well as in meetings with MCM officials (Minutes of Olifants River Fishing Committee, Ebenhaeser, 2 August 2004; Minutes of Co-management meeting, Ebenhaeser, 16 and 17 November 2004; Minutes of Co-management meeting, Cape Town, 13 October 2006).

From the fishers' perspective, examples of decisions taken by MCM without adequate consultation included the following: crew members were not allowed to fish without permit holders being present on the boat; unused licences had to be returned to MCM and could not be allocated to another non-licensed fisher in the community; all bycatch had to be returned to the fishery enforcement officer; and, most critically, the policy to phase out gillnet fishing in the estuary. Their concerns regarding the lack of consultation were also documented in letters to MCM and various memoranda to the Environmental Minister:

> Ons die vissers van Ebenhaeser soek graag by die staat 'n verduideliking van hoe voorneme rondom die uitfasering, want ons wil graag onderhandel. Ons voel dit is belangrik dat ons verseker dat die onderhandel proses al die belange deelnemers betrek'. (We, the fishers of Ebenhaeser, therefore want an explanation from the Department and clarity regarding the phasing out policy as we want to negotiate and discuss possible alternatives. We feel that during the negotiation process we may come up with suitable solutions that include and will benefit all stakeholders). (Letter to MCM, 28 July 2007)

However, at about the same time, concerns about the status of linefish stocks in South Africa led to the introduction of a range of policies and management measures to address the linefish problem (Van der Elst et al. 1996; Griffiths 2000; Hutchings & Lamberth 2002a, 2002b; Cockroft et al. 2002). These included restrictions on recreational fishing and a reduction in traditional net-fishing rights

and operations along the entire coastline. Estuarine-based net-fishing was also targeted because of the role that estuaries play as nursery grounds for many linefish species and concern about the impact of net-fishing on linefish species. As part of this process, the fisheries authority announced in 2005 that the Olifants estuary gillnet fishery would be phased out within five to ten years. This announcement was made in a government policy document (DEAT 2005), with no prior consultation with the local fishing community. The fishers, together with the EEU and Masifundise (a non-government organisation working with fishing communities in the Western Cape), questioned the validity of such a top-down decision, particularly within the context of the co-management program that was being developed. The fishers supported the need for some form of protected status for the estuary, and accepted the existing restricted fishing area of approximately 2 km2 at the mouth of the river, which was designated in 1934 (Province of Cape of Good Hope, 1934). Their concerns regarding the long-term sustainability of the resource are clearly articulated in the Olifants Fishing Association's Constitution (2003), which states as a key objective: 'om die visbron so effektief moontlik tot voordeel van die gemeenskap te benut' (to protect the fish resources as effectively as possible for the benefit of the fishing community) (Constitution of the Olifants Fishing Association 2003) as well as other statements made at meetings and workshops throughout the 15 years of this engagement (for example, Olifants Fishing Committee Meeting, Ebenhaeser, 16 November 2004; Minutes of Meeting, EEU, UCT, 6 October 2006).

Recent years (2005-present)

From 2004–05 onwards, the nature of the engagement shifted back to research to ensure that relevant information on the status of the resource, as well as the impacts of fishing on bycatch, was available. Data on bycatch were recorded by monitors when the community-based monitoring program was reinstated in July 2004. Despite MCMs stated intention to phase out gillnetting in the estuary, efforts to foster co-management arrangements between the fishers and government authority were pursued, with the EEU playing a facilitating role. However, these efforts were severely hampered by the differing interpretations of the stock assessment results

produced by the university research team (Fielding & Bergh 2007). The university research results indicated no significant reduction in CPUE for the Olifants harder fishery, and insignificant bycatch, and thus there was no conclusive evidence that gillnet fishing had depleted bycatch stocks to risky biological levels (Fielding & Bergh, 2007; Carvalho et al., 2009). The MCM scientists, however, questioned the veracity of these results and referred to early work conducted in the Berg River (Hutchings & Lamberth 2002a, 2002b) 125 km south of the Olifants River, which suggested that the net fishery for harders is maximally or overexploited. However, extrapolation of these general findings to the Olifants River is not necessarily valid and hence insufficient grounds for closing the fishery – especially given the fishers' dependence on the resource.

Similarly, results from an analysis of the monitoring data for the period 2003–06 also indicate that bycatch of the gillnet fishery is low (Fielding & Bergh 2007; Carvalho et al. 2009). What is not clear from the data available is whether current low levels of bycatch are due to major impacts (fishing and other environmental impacts) that occurred several decades ago prior to monitoring, or whether the low levels of bycatch in the estuary are the result of very reduced linefish species that use the estuary. Clearly, these issues need to be further investigated and debated but the university research team were convinced that closure of the fishery could not be justified on current data.

A further major stumbling block in the co-management negotiations was the very different management objectives articulated by the two partners, MCM adopting a highly precautionary conservation approach to fisheries management as opposed to the UCT research team and fishers that sought to balance conservation with local livelihood objectives. Complete closure of the fishery was unacceptable to the fishers and reluctance of the authorities to respond to requests by the fishers and the university partners to explore alternative management measures to address resource concerns and the problem of bycatch, resulted in a gradual breakdown of trust between the authorities and the fishers. The co-management initiative was increasingly seen as a farce and fishers openly criticised MCM at meetings about their failure to embrace the principles of co-management. 'Hulle praat van medebestuur maar

MKB neem al die besluite' (They speak of co-management but MCM makes all the decisions) (Pieter Cloete, Chairperson, Olifants Fishing Committee, Minutes of Meeting, EEU, UCT, 6 October 2006).

In 2007, as part of a program to enhance the management of estuaries in the Western Cape Province, a consulting group, Anchor Environmental Consultancy, was appointed by the Cape Action Plan for the Environment (CAPE) Regional Estuaries Management Programme with full endorsement from MCM, to develop a Management Plan for the Olifants Estuary. This Management Plan initiative was in response to DEAT's commitment to implement its National Biodiversity Strategy and Action Plan (DEAT 2004), which, when adopted, would have legal status in terms of the recently promulgated 2008 National Environmental Management: Integrated Coastal Management Act. The Olifants River Estuary had been identified as a biodiversity conservation priority requiring a clear management plan. According to the consultant's report, the area was considered to be 'relatively unaffected by human development' and hence offered an 'unofficial wilderness sanctuary for flora, fauna and for visitors' (Anchor Environmental Consulting 2008). Little reference was made to the traditional fishing activities of the Ebenhaeser fishing communities nor other human dimensions of the estuarine system.

The outcome of this management plan formulation process was a recommendation to zone the estuary for different activities; declare a 'no-take' Marine Protected Area (MPA), which would extend from the mouth of the river for approximately 14 km inland; the phasing out of gillnetting by 2014; and the identification of alternative livelihoods for the fishers of Ebenhaeser. The designation of this MPA would effectively remove the fishers' customary rights and impact on their rights to food and livelihood. These proposals were seen as totally unacceptable by the fishing community. Consequently, the Ebenhaeser fishers, together with the EEU and Masifundise, elicited the support of the Legal Resources Centre (LRC), a public interest litigation organisation, to assist the community assert their rights to resources by writing to the relevant Minister. This action has resulted in a delay in finalising the Management Plan and a review of the proposal to declare the estuary an MPA in terms of the 1998 Living Marine Resources Act. Since late 2008, the fishers and their social

partners have been engaged in discussions with MCM officials to resolve this conflict. Information that may be required to challenge this MPA proposal has been identified and a new research agenda is being developed. However, the litigation route is not desirable for government or the fishers, and totally undermines efforts to establish some form of co-management system for this fishery.

The near closure of the net-fishery without adequate consultation with the fishers, or consideration of alternative management measures to address concerns about the bycatch, necessitated a rethink of EEU's research focus and strategy, as well as the unit's role in this university-community partnership. The expansion of the partnership to involve researchers from other disciplines, in particular history, in order to gain evidence to support the customary rights of fishers, as well as other social partners such as the LRC that could jointly challenge this disregard for the fishers' human rights, has characterised the recent phase of research.

The following section of the article discusses the changing nature of this partnership, in particular, the unit's changing perspectives regarding how to address complex small-scale fishery problems, as well as a how the unit's approach to research and capacity development has been reconsidered based on an improved understanding of the Ebenhaeser fishery system and the changing policy and management environment.

Research: shifting perspectives and approaches

The initial response to the concern about the perceived decline in fish catches in the estuary in 1993 was to dispatch a fisheries biologist to find out whether there was in fact a reduction in catches, and if so, what the possible causes might be (Sowman et al. 1997). Based on this preliminary investigation, a research project was developed that focused on, firstly, the collection of fisheries data by trained community monitors, and, secondly, conducting an experiment using varying mesh sizes to ascertain whether changes in gillnet mesh size may have affected catch rates. Both these aspects of the research were undertaken by fisheries scientists, who were part of the university research team, which also designed the experiment and catch monitoring cards, supervised the entering of data and finally undertook the analyses. Findings from these research activities were

documented in various research reports and publications (Sowman et al. 1997; Sowman & Bergh 2001).

Similarly, the design and administration of a household survey and focus group meetings (1996–1997) were undertaken by university researchers with assistance from community members. Results from these surveys were documented in various research reports and published in the academic literature (Sowman et al. 1997; Salo 1998; Sowman et al. 1999; Sowman 2003; January 2006) and will not be discussed further in this article. However, of relevance here is that this phase of the research was largely driven and executed by the university researchers with assistance from the community. Discussions regarding the application of the research data to management decisions were largely undertaken between the university researchers and officials from the government fisheries agency. Although research results were discussed at fisher meetings on a regular basis and popular pamphlets on specific issues were distributed in the community, the design, execution and analysis of research were largely driven by the university 'experts'.

Although not initially conceived as a research activity, the EEU's facilitation of the co-management arrangements between the fisheries management authority (initially CNC and later MCM) and the fishers, developed into a long-term research activity. Not only did the EEU play a facilitation role in these processes, but it was also able to reflect on and analyse the issues affecting progress with co-management arrangements between the fishers and the government agency. In particular, facilitation of these co-management processes provided understanding and insights into the conditions required for co-management to be operationalised in a small-scale fishery context, such as the harder net-fishery throughout South Africa. At about this time, the notion of co-management as an alternative approach to managing small-scale fishery systems was being advocated and explored in many countries throughout the world (Pomeroy & Berkes 1997; Raakjær Nielson et al. 1996; Berkes et al. 2001). Based on the EEU's involvement in Ebenhaeser and other community fisheries projects, researchers from the EEU were invited to participate in a worldwide collaborative co-management research programme (Raakjær Nielson et al. 1996; Sowman et al. 1999). In this respect, the

university research contributed to debates and theories about co-management and insights gleaned from this study contributed to an analysis of co-management initiatives in the southern African region, which explored the feasibility of co-management as an alternative to conventional top-down management approaches (Wilson et al. 2003). Furthermore, the research team's interest in co-management as an alternative approach to coastal and fisheries resource management led to a book project in which nine other co-management case studies were documented and analysed (Hauck & Sowman 2003).

University research between 2001–06 was limited due to funding being targeted at awareness raising and capacity development activities. However, in 2003, new funding was secured and this led to the revitalisation of the community-based monitoring system as reliable and long-term fisheries data were needed to determine a sustainable harvesting regime for the estuary. Four female members of the community underwent a two-week training course at UCT, which had a theoretical and practical component. Involvement of female monitors provided an excellent opportunity to enhance involvement of women in a largely male-dominated activity. Interaction between these monitors and the EEU research team has been regular and staff and postgraduate students work closely with them to address problems as they arise. Furthermore, as the monitors' knowledge about the fishery has increased, their contribution to research and management discussions as well as their input at fisher committee meetings and government–community meetings has become increasingly important, thus playing a key role in the co-production of knowledge (Figure 2).

Since 2007, in response to plans to close the fishery, reliable fisheries data have become even more essential. The ongoing collection of fisheries data is necessary, given that consistent long-term data sets are vital for reliable fisheries management. A paper on the reliability of the Olifants Estuary community-based monitoring system has recently been published to highlight the reliability and value of the community-based catch monitoring system (Carvalho et al. 2009). These data are required for negotiations with government scientists and conservation biologists involved in management decisions.

However, despite research reports and publications indicating that there has been no significant reduction in CPUE for the Olifants

River harder fishery for the period 1994–2006 and that linefish bycatch is low (Fielding & Bergh 2007; Carvalho et al. 2009), MCM scientists and their consultants are adamant that closure of the fishery is necessary to conserve biodiversity, rebuild linefish stocks and restore the ecological integrity of the estuary (Anchor Environmental Consultancy 2008) and that no alternative management measures are feasible. It is this narrow scientific focus to fisheries management that has created tensions between the UCT research team, the fishers and government scientists and managers (Minutes of Meeting, UCT, 1 September 2008).

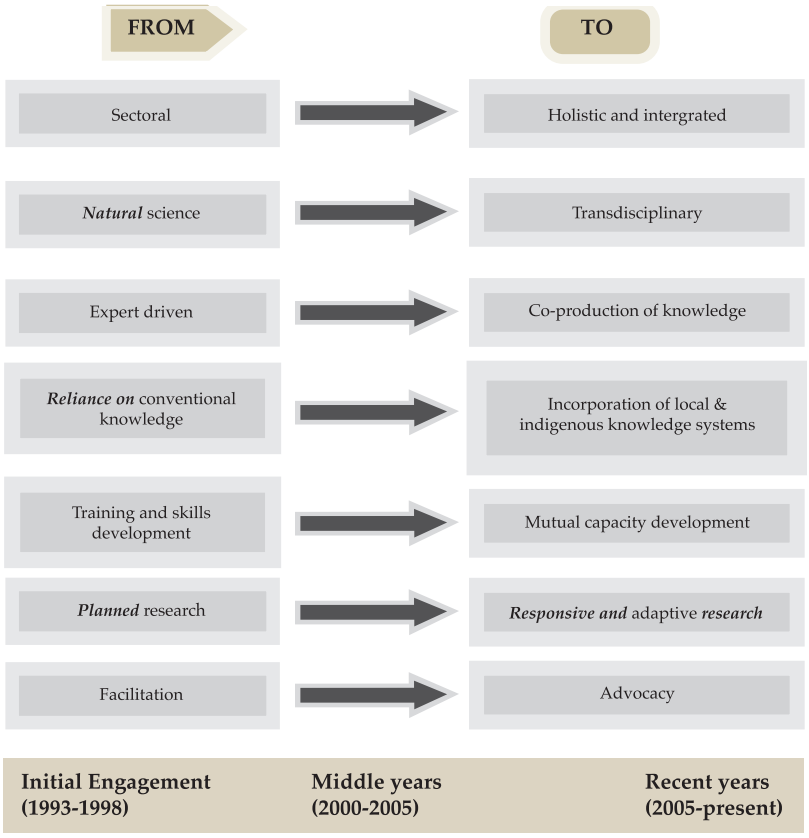
Whilst closure of the estuary to fishing would achieve the conservation objectives listed above, it fails to recognise the human dimensions of the fishery system, and in particular the traditional rights of the fishing communities that depend on these resources for food and livelihood. This disregard for the fishers' rights and failure to engage them in the Management Plan development process has initiated a new wave of research that is focusing on gathering and analysing oral histories from fisherfolk in the Ebenhaeser community. The rationale for this research is to gain information on traditional fishing practices and identify customary rules that governed this fishery historically. This information may be required to demonstrate customary rights of these fishers and to legally challenge the proposal to declare an MPA. The research team involved in this process is significantly expanded, and involves disciplines across both the natural and social sciences – history, law, social science, geography, environmental and marine science and community development, as well as NGOs working with the fishers.

In addition, the research partners are engaging with a broader group of marine scientists, both in South Africa and internationally, who have significant experience in small-scale fisheries management. The purpose of these interactions is to identify and investigate alternative management measures to address the bycatch problem and to investigate supplementary livelihood activities for the fishers of Ebenhaeser.

Clearly, the nature and focus of the research has changed over the life of this project, from an initial focus on fisheries science to a recognition of the need to understand the fishery system in all its complexity (Charles 2001; Berkes et al. 2001). An improved

understanding of the historical and cultural aspects of the fishery is now required in order to provide a holistic understanding of this complex human-ecological system (Figure 2). Furthermore, the incorporation of local and indigenous knowledge regarding customary practices and rules governing the fishery historically is required to establish the customary rights of the fishing communities of Ebenhaeser and challenge proposals to remove their rights.

Figure 2



This historical aspect of the research has been neglected to date. In addition, it is anticipated that engagement with the broader group of marine scientists will assist in identifying research questions that need to be addressed in order to identify management measures that seek to balance conservation and livelihood objectives. The recent phase of research has thus taken on a transdisciplinary orientation in that the research partners together with the fishing community are

jointly framing the research problems, setting the research questions and identifying appropriate research methods to conduct the research (Figure 2).

Adopting a transdisciplinary approach requires researchers to understand and consider the key philosophical underpinnings and methodological approaches of the other disciplines involved and identify a conceptual framework and methodological approach that is acceptable to all partners and addresses the questions at hand. This integrative approach represents a blending of philosophical thought and interdisciplinary understanding (Amey & Brown 2005) and a moving towards a collective responsibility for the intellectual processes guiding the research. The finalisation of this transdisciplinary research framework is still underway.

The evolution of this research project from a largely fisheries science focus to a transdisciplinary problem-solving approach involving researchers from different disciplines, institutions and the fisher community presents an exciting, enriching and empowering process for all involved. The research team are motivated by the intellectual and learning opportunities created by this collaboration. The fisher community feels a sense of support from their social partners, and realises that their involvement in knowledge generation is crucial to ensuring that their rights are recognised and protected.

Their ongoing involvement in the community-monitoring system, social surveys and oral history studies is crucial to the collection of data that can inform decision-making. Thus the focus of this project has shifted from gathering information by 'the experts' in order to analyse and produce data for management and decision-making, to the co-production of knowledge where the knowledge produced is 'an emergent product of the university-community engagement' (Onyx 2008, p. 102). Researchers and community members now have a common vision and purpose with regard to the project, namely, to recognise and protect the customary rights of the fishers of Ebenhaeser and ensure the long-term sustainability of the fishery system through the identification of appropriate governance models and management measures that are broadly acceptable to all stakeholders.

This shift in thinking and approach has to some extent been reinforced by developments in the small-scale fisheries arena

internationally as well as the researchers' participation in various international conferences on the topic. The discourse on alternative approaches to managing small-scale fishery systems and taking an integrated, participatory and human rights based approach to management is now considered the only way to achieve sustainability (Charles 2001; Berkes et al. 2001; Berkes et al. 2003; McClanahan et al. 2009). The ideas emerging from this discourse are being applied in the Ebenhaeser fishery and lessons learned from their application are contributing to debates and theoretical developments in the field of fisheries co-management (Hauck & Sowman 2003; Raakjær Nielson et al. 1996, Wilson et al. 2003).

Capacity development: from training fishers to mutual learning

Over the lifespan of this project, there has been a shift in emphasis from 'training' and 'building capacity' of fishers and monitors, to one that recognises that mutual learning and capacity development is occurring for all partners. While the initial phase of the project focused on implementing a series of training and capacity building workshops for fishers, the latter phase of the project has been characterised by joint learning and problem solving. Members of the fishing committee and the monitor group are now integrally involved in the meetings and workshops linked to the development and implementation of the transdisciplinary research program.

Engagement with this project has enabled a number of postgraduate students and staff to engage with the complexities of the small-scale fisheries arena and link theory to practice. While the students' research has been presented in conventional student dissertations (Salo 2001; January 2006; Carvalho et al. 2009), the learning that has taken place in the community has extended far beyond a conventional academic education. Working in this community has required the university team to navigate differences in culture and language, in values and understandings about resource management and the meaning of community, and also difficult power dynamics, especially in the initial stages of building the relationship. This engagement also forced researchers to confront preconceived ideas about the idealised lifestyles of traditional fishing communities, and instead focus on providing solutions to enhance their livelihood circumstances.

Furthermore, involvement in this project has challenged traditional disciplinary thinking and empowered researchers and students to extend their disciplinary boundaries and increase their knowledge spheres (Amey & Brown 2005). For the university research team, ongoing involvement in the research, capacity development and community activism in Ebenhaeser has broadened understanding of these complex and dynamic systems and forced a rethink of the theoretical ideas underpinning the research as well as the methodological approaches to conducting research in small-scale fisheries (Figure 2). In particular, recognising small-scale fisheries as complex adaptive systems (Berkes et al. 2001; Gunderson, 2003; Armitage et al. 2008) has led to the inclusion of a module on 'Systems Thinking and Complexity Theory' in our Environmental Management Masters Program, as well as the application of these ideas in a module on 'Integrated Coastal Management'.

Expansion of the research team to address the current issues at Ebenhaeser has also necessitated a rethink of key research questions underpinning the project as well the methodological approaches employed (Figure 2). The research teams' recent participation in an oral history short course to learn how to gather and interpret oral histories, engagement with the legal team regarding the clarification of the fishers' customary rights through historical research, and ongoing engagement with the broader group of marine scientists regarding alternative management measures to address conservation issues, have all contributed to enhancing knowledge and developing skills amongst the team.

From facilitation to advocacy: an uneasy shift

During the first decade of involvement with the Ebenhaeser fishing community, the EEU played a facilitation role between the Ebenhaeser fishers and the relevant fisheries authority. In general, the relationship between the different stakeholders has been cordial and mostly respectful, even though the fishers, government (managers and fisheries scientists) and the researchers have not agreed on several policy and management issues. Nonetheless, despite these differences, there has been a willingness to pursue discussions on developing some kind of co-management arrangement. Throughout this university-community engagement process, the EEU has recognised the difficult task of balancing conservation and livelihood objectives but has

insisted that the quest for sustainability must be underpinned by principles of participation, equity and social justice.

However, the events of the past 20 months and, in particular, the proposal to declare the estuary an MPA, has required the EEU research team to shift its position from a mainly facilitation role to one of advocacy (Figure 2). The total disregard for the customary rights of this fishing community, and the failure to meaningfully involve them in the development of the management plan, is indicative of a fundamental difference in values and approach to resource management by government scientists and managers and their consultants, and has led to a complete breakdown of trust between, on the one hand, the government, conservation groups and consultants supporting the declaration of the MPA, and, on the other, the fishers, the EEU and NGOs working with the fishers.

While the research team acknowledged the importance of protecting parts of the estuary for restoration of depleted linefish stocks and the need to afford it some conservation status, these conservation interests need to be balanced against the customary rights and socio-economic needs of this marginalised fishing community. Further, our research and that of other similar cases internationally, suggests that sustainability of fish stocks and fishing is possible under conditions where government and communities work in partnership. The closure of the estuary to fishing and the consequences of such radical management action were considered unjust, inequitable and contrary to principles underpinning the Constitution of the Republic of South African, 1996 and various resource management laws. Consequently, the EEU research team resolved to work collaboratively with the Legal Resources Centre (LRC), Masifundise and the fishers to challenge the proposal to declare the estuary an MPA. This clear opposition to the proposed MPA and willingness to participate in legal action against the state and its consultants is indicative of the EEU's shift in position (Figure 2). Ongoing interactions with the above groups have resulted in specific actions, such as the drafting of a letter to the Minister of DEAT to prevent formal adoption of the Olifants Estuary Management Plan, ongoing meetings with senior MCM officials to explore alternative management measures that recognise the human dimensions of the fishery, and ongoing meetings with the social partners and the fishers to strategise about the future of the fishery.

The decision to take on an advocacy role is not a comfortable one, especially given the research team's longstanding relationship with the fisheries management agency and other conservation stakeholders involved in estuarine management. Challenging these proposals and taking a definite position against government and the consultants on this matter, and working with a legal team and other social partners to challenge government proposals, may have implications for future projects and partnerships, and even funding.

Conclusion

This article has documented the evolution of a university-community partnership that has benefitted both the community and the university, through joint research and mutual capacity development. What started as a community request for scientific advice regarding a perceived decline in fish catches in the Olifants River estuary has developed into a multi-faceted partnership project characterised by transdisciplinary research that is responsive to changing community needs and government policies, the co-production of knowledge, learning and capacity development, and the creation of mutually respectful and durable relationships between the university and the fisher communities of Ebenhaeser. It has also highlighted the value of working collaboratively with communities and other stakeholders to jointly tackle complex human-ecological problems.

While the initial focus of the project was on providing 'expert' advice to assist the fishing community and build capacity to enable fishers to participate in management, the later years have been characterised by collaborative research and the co-production of knowledge in the face of policy changes and management decisions. Capacity and skills development amongst fishers and monitors have resulted in empowerment of the fisher communities and the ability to respond directly to fisheries policies and management proposals that threaten their livelihood. Similarly, the university researchers involved in this partnership process have been required to extend their disciplinary perspectives and knowledge arenas, embracing different paradigms, methodological approaches and knowledge systems in seeking to address the challenges facing the fishery and the community. In addition, this partnership project has provided an opportunity to apply theoretical ideas to a real case situation and assess their applicability in a changing policy and governance environment.

The immediate and powerful response from the social partners to the recent proposals to declare the estuary an MPA has reinforced the strength of the relationship between the various partners and the value of sustaining the partnership. The recent expansion of the partnership and the interactions across this multiple stakeholder group – that is, university-community-other social partners – presents an exciting, enriching and empowering process for all involved and has already yielded new insights and innovative ideas for improving our understanding of these complex issues and for challenging management proposals and policies as necessary.

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