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Response to Brook and McLachlan. 2005. "On Using Expert-Based Science to "Test" Local Ecological Knowledge"

Comparing Expert-Based Science With Local Ecological Knowledge: What Are We Afraid Of?

Grant Gilchrist [1] *and Mark L. Mallory* [2]

Key Words: *Arctic; ecological science; LEK; local ecological knowledge; wildlife management.*

INTRODUCTION

The published literature on local ecological knowledge (LEK) is rich with debate on its merits (e.g., Berkes et al. 2000, Huntington 2000), but tangible examples of its application to wildlife management are rare (e.g., Lyver 2002). Brook and McLachlan (2005) recently critiqued our manuscript in which we compared information derived from scientific empirical studies with LEK (Gilchrist et al. 2005). Although they agreed that there are few examples in which ecological science and LEK have been compared simultaneously, they took issue with our attempts to do so. Frankly, we find little value in producing more papers that simply discuss LEK, and would rather write papers that apply it. However, we believe that Brook and McLachlan (2005) raise several points that perpetuate ongoing misconceptions between empirical scientists and those working principally with LEK, and that these warrant a response.

We take strong issue with their suggestion that the "primary goal" of any study that involves the application or collection of LEK should be to "empower communities." We have a different priority. In the realm of wildlife management for example, the purpose of collecting LEK is not to satisfy political agendas or appease the politically correct, socioeconomic rhetoric that continues to plague discussions of LEK. The purpose of collecting LEK in a wildlife management context is to seek out and apply any sources of reliable data, including information collected independently from western science, to help make more informed wildlife management decisions. This was clearly stated in our original manuscript. To do so helps ensure that wildlife populations do not decline, particularly as a result of human activities.

Clearly, a wildlife management system that ensures sustainable use of wildlife and wildlife habitat, and not the collection of LEK per se, will have the greatest "local benefit to communities." By contrast, a management system that is based on unreliable information, regardless of its source, jeopardizes the sustainability of wild populations or may result in excessive or unnecessary harvest or land use restrictions, particularly in polar environments and among long-lived species such as those presented in our four case studies.

What is reliable information? Brook and McLachlan (2005) indicate that both LEK and western science vary spatially and temporally, and they provide at least nine factors that make collection and interpretation of LEK information problematic. They go on to say that ecological studies often generate varying and contradictory results, and that the methodologies used in each type of investigation will influence the results. We strongly agree with these points. In fact, we made it clear in our original paper that our goal was to seek out, assess, and apply any information that might help manage wildlife populations. However, we feel that inherent in any data collection, whether LEK or empirical science, there must be a sound, defensible, and verifiable methodology in its collection and interpretation so that the information generated can be rigorously assessed, understood and applied in its proper

[1]Canadian Wildlife Service National Wildlife Research Centre. 1125 Colonel By Drive, Raven Road, Carleton University. Ottawa, Canada. K1A 0H3,
[2]Canadian Wildlife Service

context. This is a fundamental tenet of the western scientific method, but not necessarily of LEK studies.

For example, the authors cite a review of LEK and science-based studies (Freeman 1992) in which LEK proved that some scientific results were incorrect. Ironically, it is this process of comparing the two sources of information that we strongly recommended in the conclusions of our original paper. By doing so, it may be possible to identify discrepancies in the results generated by the two methods, as well as identify what factors generate those discrepancies, including sources of bias.

Given the numerous sources of bias listed by the authors, and that these biases are often ignored in studies that present LEK, it is not surprising that empirical scientists continue to question its use in wildlife management decisions (Mauro and Hardison 2000). In fact, few published studies present evidence for which LEK was incorrectly applied or interpreted (Nadasdy 2003). This is unfortunate. We recently reviewed 1929 manuscripts written on birds from 10 ornithological or wildlife management journals published between 2001-2005. Only two (0.1%) of those papers incorporated LEK, one of them written by us (Mallory et al. 2003). We feel that it is only through approaches such as those presented in Gilchrist et al. (2005), and encouraged by others (Berkes et al. 2000, Huntington 2000), that the potential merits of LEK will be acknowledged by more empirical scientists in the realm of wildlife management.

The situation is made worse when authors such as Brook and McLachlan (2005) write that even the "suggestion" that LEK information be rigorously evaluated against western scientific methods "marginalizes the contribution of local peoples" (Brook and McLachlan 2005). They write that, "the growing recognition of LEK can lead to appropriation and misuse, further marginalizing the original holders of the knowledge ... the incorporation of both local and scientific knowledge is inevitably influenced by these power dynamics ... Gilchrist et al. (2005) ... [aid] in maintaining the balance of power in the hands of the scientists and marginalizing the contribution of local people." In this section, the authors demonstrate a lack of understanding of our original manuscript, its intent, methods, and conclusions, as well as wildlife management in Arctic Canada.

Perhaps nowhere in North America do local communities have more influence on the types of wildlife studies undertaken, the magnitude of those investigations, and the ability of community members to be involved. Indeed, through institutes of public government and their associated policies under the Nunavut Land Claims Agreement, local communities have input on permit considerations and even funding levels of wildlife studies. Most importantly, there has been increased effort and attention to incorporating LEK into these projects; a priority which was the focus of our original paper. Thus, there is ample evidence that communities in the Canadian Arctic have recently been empowered by this process, not "marginalized" as Brook and McLachlan (2005) suggest.

Moreover, co-management is the operational approach of wildlife conservation that is legislated under aboriginal land claims in the Canadian Arctic. Co-management requires contributions from both resource users and government management agencies, and there is no reason why all parties involved should not share and assess information presented to them. Just as a community should not simply accept that a species is declining without knowing how scientists arrived at that interpretation, so too should scientists be able to evaluate community perspectives on an issue.

Brook and McLachlan (2005) apparently disagree. Instead, they claim that LEK has "inherent and use-value," an assertion biased by two serious flaws. First, this statement makes the assumption that all LEK is intrinsically useful. Second, it implies that LEK is intrinsically correct in respect to wildlife management application. As shown in Gilchrist et al. (2005), this is not always the case. No information, whether generated through scientific study or the collection of LEK, necessarily has "inherent value," particularly if the information is wrong. The irony of their critique is that among three of the four case studies we presented, the information generated by LEK and scientific information concurred. Thus, our manuscript presented some of the strongest evidence to date in the published literature of the merits of incorporating LEK into wildlife management decisions.

As stated above, the scientific method depends on critical evaluation of work, both before being published and certainly once it is in print. For this reason, we commend Brook and McLachlan (2005)

for critically challenging the points we raised in our earlier paper. However, after reviewing their comments, we are left to wonder why information generated through LEK should not undergo a similar process of scrutiny? What are we afraid of?

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