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Landowner Perceptions of Payments for Nature Conservation on Private Land

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Abstract

Private land conservation (PLC) programs often provide financial incentives to motivate and enable landowners to engage in conservation. However, few studies have explored the psychological and management impacts of these incentives. We interviewed 50 landowners in Tasmania, Australia who were engaged in incentivised or nonincentivised PLC programs. Landowners who received incentives were paid to either protect private land through creating a conservation covenant (a legal deed restricting land uses) or engage in a specific stewardship activity (e.g., planting trees). Most landowners who received payments to create covenants stated that they would not have done so without the payment. However, landowners, including those who have purchased or inherited covenanted properties, also indicated that neither these payments, nor the conservation covenant made any significant impact on how they managed the land. Covenant incentives did not improve attitudes towards conservation or conservationists. In contrast, most landowners receiving stewardship payments reported that these payments enabled the conservation actions they valued, helped build relationships and promoted favorable attitudes towards conservation. Contextual factors that influenced the impact of financial incentives on conservation action included the quality of relationship between landowners and stewardship officers, availability of private funds for conservation, and multigenerational aspirations. Our research identifies some of the intended and unintended impacts of financial incentives and describes how a fuller understanding of the motivations, identities, and aspirations of landowners may lead to the design of more socially resilient and ecologically effective PLC programs.

Keywords Self-Determination Theory · Sustainable farming · PES · Conservation psychology · Crowding-out · Easement

Introduction

Private land conservation (PLC) can help promote biodiversity conservation by increasing connectivity between public reserves, protecting ecological communities not found in public reserve systems, and improving land management practices (Knight 1999; Moon and Cocklin 2011). The number and scale of programs promoting PLC have

increased rapidly over the past three decades (Stolton et al. 2014; Drescher and Brenner 2018). There has been a range of conservation covenants (legal agreements to protect parts or the whole of private land parcels for conservation purposes), agri-environment, carbon trading, and payments for ecosystem service (PES) schemes that provide financial incentives to promote conservation (Blackmore and Doole 2013; Wunder 2013; Borner et al. 2017). These market-based incentive schemes are meant to reduce the costs of conservation on the landowners or improve attitudes of landowners toward conservation in order to efficiently enhance conservation outcomes on private land (Ferraro and Kiss 2002; Kleijn and Sutherland 2003).

Although numerous studies have explored the ecological (Kleijn and Sutherland 2003; Dobbs and Pretty 2008; Ogada and Kibuthu 2008) and socioeconomic impacts (Putten et al. 2011; Iftekhar et al. 2014) of incentive programs on PLC, fewer studies have explored the psychological impacts (DeCaro and Stokes 2008; Greiner and Stanley 2013). Because the biodiversity impacts of

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incentive programs on private conservation action are mediated by the landowner's experience of the program, more studies on the psychological impacts and social contexts of incentives are critical to understanding the full range of potential short- and long-term impacts of incentives (Wilson and Hart 2001; DeCaro and Stokes 2008). For example, even if incentives do not lead to immediate management or ecological changes, psychological shifts resulting from incentives, such as more positive attitudes about conservation or conservationists, could have lasting environmental impacts beyond a single generation of landowners, a single property or a covenanted area (DeCaro and Stokes 2008; Burton and Paragahawewa 2011).

Research in social psychology and behavioral economics has distinguished between autonomous and extrinsic forms of motivation (Deci and Ryan 2000; Evans et al. 2013). Self-Determination Theory (SDT), an empirically supported psychological theory on motivation, has suggested that when people are autonomously motivated by personal values or inherent satisfaction to engage in an activity they demonstrate greater well-being, performance, engagement, creativity, and persistence (Ryan and Deci 2000; Vansteenkiste et al. 2004; Taylor et al. 2014). In contrast, when people are extrinsically motivated, continued engagement depends upon the maintenance of an external stimulus such as payments. Furthermore, extrinsic rewards such as payments may "crowd-out" and reduce autonomous motivation (Festré and Garrouste 2014; Rode et al. 2015). Crowding-out may occur when payments are initiated and then a previously autonomously motivated activity (e.g., "Planting trees because it is personally meaningful") might be replaced by an extrinsic motivation (e.g., "I am planting trees only to get paid") (Reeson and Tisdell 2008; Ezzine-de-Blas et al. 2018).

In some contexts, however, extrinsic rewards can also "crowd-in" or enhance autonomous motivation by improving attitudes about conservation, enhancing trust for conservation organizations, communicating values and norms on the benefits of conservation for society, and acknowledging or supporting traditional conservation behavior (Van Hecken and Bastiaensen 2010). SDT research in education and community-based conservation has suggested that programs designed to support the basic psychological needs of a sense of autonomy (need to be a causal agent of one's life and act in harmony with integrated self), competence (need to control the outcome and experience mastery), or relatedness (need for social belonging and connection and care to and for others) are more likely to crowd-in, and less likely to crowd-out, autonomous motivation (Deci et al. 1999; Rode et al. 2015; Ezzine-de-Blas et al. 2018). Furthermore recent reviews have suggested that those projects that crowd-in autonomous motivation are more likely to be effective in meeting

ecological or social goals (Akers and Yasué *In press*; Cetas and Yasué 2016). To date, much of the research on the impacts of incentives on behavior has relied on quantitative studies using laboratory experiments or surveys (Festré and Garrouste 2014; Rommel et al. 2015; Ezzine-de-Blas et al. 2018). Such studies may limit analyses of the wide range of contextual factors that influence landowner experiences of incentives. Therefore, to complement earlier quantitative work in our study area of Tasmania, Australia (Yasué and Kirkpatrick 2018), we employ semistructured interviews to provide a nuanced picture of the effects of incentives on the perceptions, attitudes, experiences, actions, and motivations of PLC landowners (Rubin and Rubin 2005; Bloor and Wood 2006). By enhancing understanding of the social contexts and psychological processes that influence the autonomous and extrinsic motivations of landowners, our study aims to extend SDT research into PLC. Our findings support the design and implementation of enduring and effective social or environmental programs, in which extrinsic incentives such as payments are used to shift behavior (Tracy 2010).

Methods

Study Area - Context of Conservation in Tasmania

Tasmania has a history of environmentalism and polarized environmental debate (Reynolds 2012; Schultz and Cica 2013; Lucas and Warman 2018). Australia's southern island state was one of the first jurisdictions globally to initiate systematic planning of protected areas (Kirkpatrick 1983), was the birthplace of the world's first Green political party and has over 40% of its land managed by Tasmania Parks and Wildlife Service (DPIPWE 2016). This protection included UNESCO World Heritage Sites that were established in the 1980's that covered 1/5th of the state of Tasmania. Since that time, the emphasis has shifted toward conservation on private land because of the limited public or political interest in expanding the public reserve system. Because of the long history of environmentalism in Tasmania, these PLC programs have generated substantial public interest. As a result, relative to its small population size (c. 520,000), Tasmania has a large number of participants engaged in voluntary PLC schemes (Supplementary materials [S1]). These programs varied in both the target biodiversity type as well as the presence, type, and size of financial incentives (Moon and Cocklin 2011; Putten et al. 2011; Cowell et al. 2013).

Broadly there are three different types of PLC conservation programs in Tasmania (S1). First, there were covenanting programs that employed formalized agreements between landowners and government to set

environmental restrictions in perpetuity on private land (Hardy et al. 2016). These conservation covenants were written into the land title and thus can have intergenerational implications. Between 1999 and 2017 several different types of covenanting programs provided different amounts of incentives and targeted different types of biodiversity. Some programs paid only the legal or administrative costs of covenants, whereas others paid substantial up-front and one-off financial incentives that occasionally amounted up to the full property value of the covenanted area (e.g., 1014 AUD/Ha) in order to offset the legal, management and, or opportunity costs of covenanting (Iftekhar et al. 2014; Borner et al. 2017). Some of the covenanting programs determined appropriate levels of incentives based on negotiations between the government agency and the landowners, while others used a competitive bidding process in which competing landowners submitted applications outlining the biodiversity values on the property, their proposed course of management action, and their compensation bids (Iftekhar et al. 2014; Rolfe et al. 2017). In 2016, there were 843 conservation covenants protecting 107,349 ha of perpetual reserves, with an additional 42,000 ha of private land protected under fixed-term covenants and other private land reserves (DPIPWE 2017).

Second, stewardship programs provided project-based payments to landowners to support the costs of conservation and sustainable management projects on private land. Participants could apply for these funds as they became available through different governmental or nongovernmental organizations and carried out short-term, time-bound projects such as fencing off native vegetation from cattle or planting native trees. Some of these programs were run through both governmental agencies, such as Natural Resource Management (NRM), and nongovernmental organizations, such as Greening Australia, and tended to target individuals, whereas other programs such as Landcare provided funding largely for community groups (Curtis and Lockwood 2000; Prager and Vanclay 2010). Included in these types of programs is the Midlands Conservation Fund, that provided landowners with up to 10-year support for stewardship projects on private land. Although it is hard to estimate the exact number of landowners engaged in these types of programs, a survey suggested that 48% of farmers and 12% of rural landowners participated in some type of Landcare or NRM stewardship programs that provided project-based payments to landowners (Schirmer and Mylek 2016).

Third, there are PLC programs that are strictly educational program that provided no financial support and that did not place legally binding responsibilities on landowners. One of these programs in particular (“Land for Wildlife”) was administered by the Tasmanian Government. It provided educational material to landowners with properties

that were >2 Ha (McDonald 2001; McGuire et al. 2013) and provided signs that landowners could display on their properties. Unlike covenanting programs, “Land for Wildlife” designation is not written into the land title and thus does not have legal or intergenerational ramifications. In 2016, there were 958 registered participants involved in the Land for Wildlife strictly educational program, totaling 58,000 ha of private land (“Department of Primary Industries, Parks, Water and Environment—Private Land Conservation Program,” 2017).

Participant Recruitment and Sampling

Between September and December 2016, the lead author (MY), who was a Canadian visitor to Tasmania, met with local experts who work on PLC in Tasmania by contacting four local conservation and agricultural organizations, two government agencies and four research groups and attending three community PLC events. These meetings and events enabled her to become embedded in and interpret the local context in order to develop the study design, interview schedule, and recruit participants.

Purposive sampling was used to recruit participants of PLC programs through personal or professional contacts of the authors (two coauthors of this study each had over 30 years of experience working on PLC in Tasmania), email mailing-lists, newsletters, a community newspaper, group Facebook sites, and on the final question of a survey on the values and motivations of landowners that was administered concurrently as part of a different study (Yasué and Kirkpatrick 2018) and emailed to conservation landowners in Tasmania. Through our sampling approach, we aimed to enhance the diversity of landowners interviewed. Specifically, we sought landowners involved in different types of PLC program (i.e., covenanting program, stewardship program, and strictly educational program), with different property characteristics (commercial and not-for-profit property, multigenerational farm, corporate farm, second generation covenantor) and demographic characteristics, such as gender and age of participants (25–50 years old versus >50 years old), as well as variable levels of interest and commitment towards the environment (based on perceptions of professional contacts, who engaged with landowners on PLC), as past studies and local experts indicated that these variables may influence motivations for conservation on private-land (Knowler and Bradshaw 2007; Capitanio et al. 2011; Lastra-Bravo et al. 2015).

“Commercial properties” were defined as properties in which the primary source of income came from the land (either through farming or tourism), whereas “not-for-profit” refers to properties that were primarily used for residential, recreational, retirement, vacation, or “lifestyle” purposes (Polyakov et al. 2013; McNicol and Glorioso

Table 1 Profile of participants engaged in covenanting, stewardship and strictly educational programs

	Total	Commercial	Not-for-profit	Multigen. farm	Age <50	Female ^a
Covenant	23	10	13	3	6	3
Covenant—Paid	11	5	6	3	5	1
Covenant—Unpaid	8	2	6	0	1	2
Stewardship	16	13	3	9	4	3
Education only	6	1	5	0	2	4

“Total” represents the total number of properties included in each category and includes second generation covenanters. Covenant “Paid” includes participants who received substantial payments beyond the legal and administrative costs to covenant. “Unpaid” refers to participants who received only small amounts of funding to pay for the legal and administrative costs of covenanting. “Education only” includes only people who were engaged in a strictly educational program and not in any other type of program

^aIncludes women who participated in the interview with their male partners

2014) with no or minor economic uses. The commercial properties included multigenerational farms ($n = 13$), corporate farms ($n = 2$), single generation farms ($n = 4$), and tourism operations ($n = 3$). Of the commercial landowners, multigenerational landowners owned the largest properties with the most varied uses. Most of the farmers ($n = 15$ of 19) indicated that they attended universities (studying business, economics, finance and, or agriculture) at some point in the interview (though not explicitly asked).

Not-for-profit properties included retirees who had purchased properties for the explicit purposes of conservation, personal learning and enrichment, and living ‘in nature’ ($n = 5$); younger professionals ($n = 5$) who tended to live in cities and used their not-for-profit properties as a retreat and a venue to engage in conservation work on a part-time basis; as well as properties purchased initially only to live in with and raise children ($n = 5$) with minimal land management, that, in some cases, later became retirement or conservation properties that were more actively managed for recreation and conservation. Not-for-profit properties tended to be owned by professionals, who had attended postsecondary education and included former or current environmental managers, researchers, teachers, medical professionals, and engineers. Some of these not-for-profit properties were managed as mixed use; sections of the property were managed more as a residential property, whereas other sections were used for minor commercial activities or conservation.

Second generation covenanters are people who bought or inherited covenanted land. We sought to include interviews with these covenanters even though they were not the individuals who decided to covenant because, first they did decide to purchase a covenanted property and second, in order to better understand the conservation benefits of covenants. This is because, a covenant could have important conservation impacts if it affects the management decisions of second generation covenanters, even if it may not affect the management practices of the landowner who covenanted the land.

As we did not ask participants their age and gender during interviews, the approximate age and gender of the participants were assumed based on appearance as well as self-disclosure (in some cases) when responding to other questions. In addition, in some cases (55%) we knew the age and gender of participants because these same people had also filled out a survey as part of a concurrent study (Yasué and Kirkpatrick 2018).

We stopped interviewing particular groups of landowners within the three program types, when we felt that saturation had been reached (Bloor and Wood 2006) and instead increased efforts to recruit participants who were initially not included in our sample and were more difficult to recruit (e.g., younger landowners enrolled in educational programs, farmers enrolled in covenanting programs, second generation covenantors or landowners, who had more negative experiences with conservationists). From a pool of 119 people, who agreed to be interviewed, we selected 49 owners of 41 properties (Table 1) who together provided a breadth of landowners and program types that owned properties ranging in size from 2 to 18,000 ha. Several of the participants were involved in more than one type of program (Covenant and Stewardship [$n = 4$], Stewardship and Education [$n = 2$], Education and Covenant [$n = 5$], all 3 program types [$n = 1$]). We also interviewed two landowners, who were engaged in PLC but were not part of any formal programs.

Interview Methods

Semistructured interviews ranged from 30 min to 2 h and took place between 29 December 2016 and 4 April 2017. The interviews were conducted by the lead author at a variety of locations: at the participant's home ($n = 17$), office ($n = 4$), a café ($n = 7$), as well as on the phone ($n = 13$). In most cases interviews were conducted with just one participant, however in six cases, two owners of the same property were interviewed together because management decisions were made by more than one landowner. There

were four interviews with married couples and two interviews with a parent and a son. Consent forms were sent to participants prior to the interviews and all participants provided written consent prior to interviews. Interviews were audio recorded with consent.

The interviews began with broad questions that asked participants to describe their property, its conservation history, and their experiences with conservation programs. Such descriptive questions provided an easy entry point for participants, enabled the building of trust, and allowed the interviewer to vary language and questions to ensure that the questions were relevant for a particular landowner. More interpretive questions were then asked about participants' experience of receiving incentives such as payments (S2) and whether these incentives influenced management decisions or attitudes about conservation. Both the open-ended questions about the experiences with conservation programs more broadly as well as the incentives were aimed at exploring positive or negative attitudes relating to the design or implementation of the PLC program, autonomous and extrinsic motivations to participate and how these programs fostered or thwarted the basic psychological needs of autonomy, competence, and relatedness (Deci and Ryan 2000). Landowners may underplay or overplay the impacts of economic incentives on decisions depending on cultural or social norms and group-based identities (Tetlock et al. 2000). Thus, the reliability of responses (Rubin and Rubin 2005; Perecman and Curran 2006) was enhanced by using techniques to de-link questions from social norms and identities (by using diverse lines of questioning on a single topic), probing for further examples, asking for elaborations, and asking similar questions from different perspectives. Similar techniques were used to reduce recall biases (Krumpal 2013) (some landowners were asked to recall events that occurred over a decade ago (Raphael 1987)). These strategies allowed for the clarification and interpretation of apparent contradictions in responses, and revealed the contextual factors of initial responses (Rubin and Rubin 2005). If participants did not follow the order of the interview schedule, the order of the questions was adjusted to promote greater flow in the interview (Rubin and Rubin 2005; Bloor and Wood 2006). Throughout the 4 months of interviewing, the questions were adjusted slightly as we learned more about the topics and the types of prompts that led to responses that illuminated the answers to our research questions.

Analysis

All interviews were fully transcribed and imported into NVivo 11.0, with analysis beginning during the interviewing period. We used established procedures for the analysis of qualitative interviews (Rubin and Rubin 2005; Hoonard

2015). We read the transcripts multiple times and focused on what, when and how things were said, and not said (Patton 2002; Hoonard 2015). We first coded the interviews deductively based on the main lines of questioning on the perceived impacts of these incentives as well as concepts drawn from SDT theory such as autonomous versus extrinsic motivation as well as autonomy, competence and relatedness. We then re-coded inductively looking for emergent 'horizontal' themes expressed across multiple interviews that encompassed the ways participants contextualized, elaborated and inflected lines of questioning. We also systematically compared coded transcripts from people who were in different life stages, on different types of property, and participating in different program types to explore contextual factors that may have influenced the perceptions and experiences of conservation incentives. In the interest of brevity, anonymity and clarity we edited the quotes presented in the results and removed filler words as well as the names of identifiable organizations and people, without changing the intended meaning.

Results

The results provide a description of the impacts of incentives on covenanting programs and stewardship programs. For each of these two program types, we first assessed whether the incentives promoted more conservation action or shifted attitudes about conservation or conservationists. Following the discussion on these two incentivised types of programs, as a final comparison, the paper explores the conservation action and attitudinal impacts of strictly educational programs with no incentives.

Covenanting Programs

Incentives promoted more covenants but didn't change management decisions

Some landowners ($n = 5$ of 11) indicated that they would have covenanted without the payment (S3, quote 1). However, when prompted further, most landowners who had received incentives to covenant ($n = 7$ of 11) suggested they may have never covenanted, or would have covenanted a much smaller area, without the payment. The reasons provided for not covenanting without incentives included an inability of not-for-profit landowners to afford the legal costs for covenanting, as well as it not making "business sense" for the commercial properties.

Although part of the government's expectation in offering incentives was that the money could be used to promote more conservation action by helping to cover the additional and ongoing conservation costs of managing a covenanted

area, most landowners suggested that funds did not change management actions (S3, quote 2). Landowners were already autonomously motivated to conserve and so they would have managed for conservation even without these incentives. Of 11 covenanting landowners who received incentives, only three indicated that incentives influenced how they managed the land. Most notably, one older, multigenerational farmer with a large and multiuse (including conservation) property indicated that the one-off payment helped him restructure his business when wool prices were down into a more resilient enterprise with ongoing conservation management. Although he was the only landowner, who indicated substantial management changes resulting from covenant incentive payment, a young, not-for-profit landowner also indicated that he used the funding to enhance habitat for native animals, while a retired not-for-profit landowner indicated that she could complete a fencing project faster because of the covenant incentive. These latter two participants indicated that given their relatively low incomes (one was early in his professional career and the other was living off her retirement pension), these incentive payments helped to enable more conservation management. The younger covenanter remarked “at that age, it was the most money I had seen in my life. I never had 1000 dollars in my bank at one time, except for when that money came through for the covenant”.

The fact that most participants had never intended to use the covenant incentive to enable new conservation action was evident in landowner's responses to how they decided on an appropriate level of compensation (“bids” in the case of reverse tender programs) in exchange for the creation of a conservation covenant (S1). If the landowners were relying on these covenant incentives to offset the opportunity costs of the covenant or the additional costs of management for covenanting, it would seem likely that they would have expressed an economic rationale for their conservation bid that related to opportunity or management costs. However, the interviews suggested that although it was apparent that participants wanted the funding, they did not seem to relate the money received to opportunity costs or additional management costs, nor to conservation more generally. For example, one younger, not-for-profit landholder recounted his process:

We sat around my kitchen table one night, had dinner, talked about it, we drank a couple of bottles of red wine, talked about it, we went to bed, woke up with a hangover, we looked at the blank piece of paper, and went “ahh shit we still haven't filled out the form and they are going to ask for it... Put anything down!” So we just made a number up, we put a number down, doubled-it, made it random looking, like we

calculated it, wrote it on a piece of paper and then went off to work.

This notion that they wanted the money but that it was not necessarily connected in their minds to neither opportunity cost nor the costs of conservation action was also reflected in the response of a younger farmer who said: “*I had to put a figure forward and then if it was too high they wouldn't pay it and if it was too low, then I'd get it: well there wasn't a too low that I would have got paid*”. In contrast, one of the three landowners who indicated that the incentives had influenced management, did base her bid for the reverse tender program based on opportunity cost as well as the costs for weed control and fire management.

Participants reported different reasons for not using the covenant incentives for additional conservation management. Some landowners did not use the incentives to enhance management simply because they felt that there was no management necessary to maintain the ecological values of the area. Such a perspective that nature will take care of itself was prevalent amongst not-for-profit landowners but notably absent amongst farmers. One older multigenerational farmer questioned the assumption that farmers should be expected to spend the money they received from covenanting on *conservation*. Instead he said farmers should be free to spend the money on the farm business because “without a viable business we don't have viable land management”. Several farmers similarly suggested that supporting the long-term economic viability of multigenerational farmers may help to promote more environmentally sustainable practices. Thus, from the perspective of these farmers all management decisions that farmers make are conservation or stewardship management, making our questions on the additional conservation impact of a covenant incentive meaningless to these farmers.

In some cases, incentives made no positive difference to management because the covenant *itself* made no difference to how covenanters managed the land. When creating a covenant, several landowners indicated that they were careful not to place areas into covenant that would force any changes to management. Instead they selected areas that were part of a section of their property that they were already managing consistent with the legal requirements of a covenant. These landowners often noted that there were other areas of their property that they managed in an identical manner to the covenanted area. For some landowners, a covenant had no effect on conservation management because the explicit purpose of purchasing the property was for conservation and so all management practices prioritized conservation over other uses regardless of whether the land was covenanted (S3, quote 2). For example, a younger landowner said, “it was already a covenant in our mind, basically we covenanted that property

when we bought it". For these landowners the intended purpose of the covenants for these already environmentally conscious landowners was to ensure that the management practices of future landowners would conserve biodiversity and/or to benefit from the covenant incentives without having to change their own management practices.

In addition to limited impacts of covenant incentives on actual on-the-ground conservation action, none of the four second generation covenanters indicated that the covenant made a significant impact on their management decisions. The farmers said that there were no viable economic alternatives for the area of covenanted land and therefore no concrete alternative uses if it were not covenanted. Of the two farmers who had purchased covenanted property, one indicated that the covenant had no effect on their decision to purchase their property, while another said that it made the property less attractive. The not-for-profit landowner who had purchased the property explicitly to manage for conservation, as a retirement project, suggested that the covenant made the property more attractive because it indicated to him that there was ecologically important vegetation present. The fact that it was covenanted, however, did not influence how he managed this property because he was already fully committed to conservation management. In contrast the farmers who had purchased covenanted land felt negatively about the covenant because there was insufficient support from government to help them with ongoing stewardship costs, especially because they themselves had not received any incentives to covenant. One farmer who had attempted to remove a covenant from his property suggested that buying a covenanted property was akin to buying a house with one room that you could never use. Given such unmet costs and negative attitudes, the covenant did not lead second generation covenantor farmers to engage in more conservation.

Incentives had limited positive or negative impacts on conservation attitudes

Most of our participants indicated that one-off covenant incentives had no positive or negative impact on attitudes about conservation or conservationists. Instead, people who supported covenants prior to the incentives programs still felt equally positive about covenants and their own engagement in conservation after receiving the incentives. Similarly, people who did not like covenants prior to the incentive programs continued to dislike covenants even after receiving incentives. The lack of any evidence for motivational crowding was consistent across landowners across the wide range of variability in the amount of incentive received. The only result that seemed to suggest a possibility of motivational crowding-in amongst participants, was one not-for-profit landowner who received a

moderate level of incentive and suggested that the incentives had provided a "token supportive gesture".

There were four not-for-profit landowners who accepted the covenant incentive but nonetheless had conflicting, negative, or ambivalent perspectives on the incentive (S3, quote 3). These participants expressed concern that taking money for the covenant was allowing them to be bought off so that the government could continue to log more old-growth public forest (S4, quote 4). The negative attitudes that some landowners felt about incentives was also evident in the interviews with four landowners who covenanted but only received legal or administrative costs and knew that there were other landowners in different programs that had been paid substantially more to covenant. These landowners did not speak about personal concerns about inequity in these payments but instead seemed to imply some judgment toward landowners who *needed* these incentives in order to feel sufficiently motivated to create a covenant. Such a *need* seemed to relate to insufficient internal motivation or personal funds to engage in conservation due to insufficient productivity of the farm as well as a general reluctance to spend money. A not-for-profit landowner who received minimal incentives to covenant said: "if I hadn't got the covenant on my property, if I wanted to get a covenant on my property, I could have gotten a heap of money, but because I had done it before, I couldn't. It is fine though because it wouldn't change my behavior" and then proceeding to contrast himself (a committed "environmentalist") to people who were attending meetings for information on the highly incentivised covenants. "I saw a bunch of people there only interested in one thing, quite a few retired farmer types, how I can get more income from the government?" This same not-for-profit landowner, when asked about whether tax rebate motivated him to covenant said: "150 dollars a year; well if that is the reason to make a decision, then you are a bit of a tight-ass, aren't you." In this way, the landowners themselves who felt they did not *need* these incentives seemed to feel a sense of pride or perhaps moral superiority to people who received these incentives. It is important to note that though these participants felt critical about incentivised covenants as an environmental policy and were sometimes negative about landowners who took up these incentives, they did not indicate that these feelings led them to feel negatively about covenants or conservation more broadly.

Multigenerational farmers had critiques about covenants that could not be offset by money

A majority of multigenerational farmers ($n = 7$ of 13) had negative attitudes about covenants and indicated they would never get a covenant on a family farm regardless of the amount of incentives. These farmers felt that the incentives

or permitted activity in the covenanted area could never pay for the intergenerational costs of covenants. Furthermore, even farmers who indicated deep concern for biodiversity conservation tended to have negative attitudes about covenants. Multigenerational farmers commented that “locking-up land” and being “bought out” of the management of an area had negative impacts on their sense of autonomy, economic sustainability and ecological sustainability. As one of the farmers who purchased a covenanted property emphasized: “We don’t have *full* control of the *full* title, of the *full* property”. The importance of preserving and protecting a sense of autonomy appeared to be an important social norm within the community of multigenerational farmers. Throughout the interviews, multigenerational farmers indicated that preserving autonomy was critical for the sustainability of their farms. Several farmers including farmers with strong pro-environmental values, indicated a strong ethic to not “manage from the grave” (older multigenerational farmer) and impose their personal values or management practices on their children. This desire to protect the autonomy of their children led one participant, a multigenerational farmer and self-described environmentalist with a large family farm, to go so far as to purchase a separate property away from his family farm. By covenanting this separate land, he could manage for conservation without burdening his son.

Related to concerns about a loss of autonomy, some multigenerational farmers considered that covenanting might reduce conservation outcomes due to a reduced sense of responsibility over the management of covenanted land because landowners perceived the covenanted land to be owned by the government. For example, an older multigenerational farmer, who did not support covenants, said:

We have a very strong feeling of, this land is ours, and a connection to it, and if you put in a covenant, I think there’s a certain loss that goes with it, and there’s also a certain handing over of the responsibilities, someone else is in charge of it, we’re no longer, we’ve sold it in a way. Things like weeds, are you really committed to keeping them out of that covenanted area?

This landowner and two younger, multigenerational farmers said that instead of being a personal management priority to control weeds or fire hazards, the covenanted area becomes perceived as an irrelevant parcel of land that is owned by government conservationists and is thus no longer actively managed by farmers who are the stewards of the land. Unlike many of the not-for-profit landowners who did not feel that active management was necessary for conservation or stewardship, farmers felt that the land would be destroyed without farmers autonomously and actively managing land. One young multigenerational

farmer referred to covenants as a “take-over” which relieved landowners of responsibility for the land (S3, quote 5). Thus covenant restrictions that were perceived to be developed by bureaucrats in Canberra (Australia’s capital) were thought to diminish the farmer’s ability and inclination to autonomously and creatively develop the best site-specific management strategy. Several farmers remarked that such “top-down,” one-size-fits-all covenanting restrictions may have perverse outcomes that do not benefit conservation (S3, quote 6).

Not-for-profit landowners had positive attitudes about covenants

In stark contrast to the perspectives of multigenerational farmers, the not-for-profit landowners who currently had covenants and even not-for-profit landowners who did not currently have a covenant, seemed to nonetheless have positive ($n = 8$ out of 11) or undecided ($n = 1$) about covenants and expressed an interest in covenanting in the future. Protecting this property into the future was particularly important for not-for-profit retiree landowners who were considering selling their properties in the future. Unlike multigenerational farmers who wished to preserve the autonomy of future owners, these not-for-profit landowners wanted to covenant, not to affect their own management methods, but to impose their own conservation-minded management practices on future owners. A not-for-profit landowner says: “So the main reason for the covenant is an indication for the new owner. Not to teach me how to do stuff, it is a disincentive or an incentive for the new owner on how they are going to treat the land.” Given these generally favorable attitudes about covenants, for not-for-profit landowners, incentives to help cover the legal covenanting costs or potential losses to property prices due to the covenant were an attractive proposition.

Summary of the effects of covenant incentives

In summary, although covenant incentives may have led to more people covenanting land, there was limited evidence to suggest that these incentives influenced conservation action or shifted conservation attitudes. People with positive attitudes about covenants and conservationists continued to have these positive feelings even after they received the incentive regardless of the amount of incentive. Although there were landowners who felt negatively about covenant incentives as an environmental policy or felt judgemental towards people who took these incentives, there was no evidence that motivational crowding-out had occurred. Finally, multigenerational farmers seemed to have a deeply held and reasoned negative attitude and beliefs about covenants. These farmers expressed concerns

about the high intergenerational costs of covenants and the inefficacy of covenants as a conservation strategy. Instead, farmers suggested that the ability for landowners to maintain full autonomy over their entire land was critical for long-term sustainability. In contrast such covenant incentives may help not-for-profit landowners who plan to sell to covenant.

Stewardship Programs

Stewardship incentives enabled faster, more effective conservation action for people with access to less personal funds

Participants viewed stewardship incentives as a means to enable personally important (S3, quote 7) conservation and stewardship activities; such as managing flood, reducing drought, planting trees to improve esthetics and lamb survival, introducing new perspectives on conservation management, completing conservation tasks more quickly, and building higher quality fences. Although most participants indicated that stewardship payments were linked to minor changes in management practices that they would have hoped to do anyway, one multigenerational farmer commented that, because he was able to access stewardship funds at a pivotal time when he inherited the property, he was able to implement radical changes to his business.

People who had a profitable commercial property, access to corporate funds or high-paying jobs, or were without children, placed less importance on stewardship incentive schemes. A couple of these wealthier landowners questioned whether government funds for PLC could be better used in other fields such as education and health or in public land conservation. However, participants who were more financially constrained, such as young, multigenerational farmers trying to buy out their siblings from a family business and retirees living off pensions, expressed the most positive attitudes towards stewardship incentives.

Stewardship incentives shifted attitudes towards conservation and initiated collaboration with conservationists

In contrast to the neutral or negative attitudes expressed towards one-off covenant incentives, most landowners had positive attitudes about stewardship incentives. These incentives helped to crowd-in autonomous motivation and spur more conservation activity. For example, some farmers suggested that they initially needed the incentives to motivate themselves to engage in restoration (S3, quote 8). However, after seeing the benefits of these projects on their

properties, or on the properties of other farmers (who received incentives), and after receiving positive feedback from friends and stewardship officers, restoring vegetation became “addictive” (younger, multigenerational farmer). In this way, the incentives for stewardship schemes acted as a “foot-in-the door” (Freedman and Fraser 1966) whereby landowners initially agree to a lower cost personal commitment because the program would share the costs of the stewardship action. However, over time, and sometimes across multiple generations of relationships, the landowner becomes more willing to take on more challenging or costly engagement in conservation (Freedman and Fraser 1966). These relationships, in turn, fostered autonomous motivation and led to longer-term conservation outcomes. Here, an older, multigenerational farmer in a stewardship scheme speaks about how his relationships with stewardship officers not only encouraged conservation management on private land, but also influenced broader environmental behaviors, friendships, and values.

... the pioneers, they've shaped us, they've educated us, they've had an enormous role in winning our trust, in showing us another side.... These experts have come into our communities over 2 or 3 decades. It's been a learning process. It's very challenging for a landowner to be questioned on their values and questioned on their practices and then to have potential negative land management issues pointed out at them. This is not something that really boosts your ego,..., [But] they've become our friends...the more I hang with that crew the more I,...(pause) I haven't become a vegetarian yet, but there's room.

Not only did these incentives help to spur relationships between conservationists and landowners, these incentives seemed to spark a social process in which farmers themselves began to talk more to each other about stewardship on their properties. These incentives helped to ensure that stewardship was at the “forefront of conversations and thought processes” [young multigenerational farmer]. Because of the potential for stewardship incentives to spark a community-level change, this farmer (along with others) emphasized the importance of designing projects that worked through existing social networks that mobilized the entire community rather than only targeting individuals.

Regional areas are really community-based and relationship-based... To be able to influence an area or a mindset of a community is a great way of influencing change, rather than at the individual level, which is targeted at the moment. Communities are strong. Relationships are strong. Human expectations

of each other are higher than any other motivation. – Younger, multigenerational farmer

These incentives not only helped landowners feel less alone in taking care of the land (S3 quote 9–10) and enhanced the landowners perceived and actual competence for conservation management, but also began to shift farmer perspectives about the role of conservation in their businesses (S3, quote 11).

Stewardship incentives without relationship-building were sometimes viewed negatively by farmers

Some landowners indicated frustration when they felt that conservation organizations were “throwing” money at them or at a problem from a distance, rather than investing time to build face-to-face relationships and trust, enhance community buy-in and develop programs informed by local priorities and constraints. One older farmer said: “So if you’ve got a trusted independent broker [a stewardship officer]... then you’ll get change really quickly... But if you just *chuck* money, it won’t work.” Another older farmer spoke about the necessity of taking the time to meet with the landowners and preparing them so that the money is well spent: “it is bloody easy to get money out of the government. It is damn hard to spend it and if you have got to *throw* it at farmers they won’t appreciate it. They have got to want to take those funds and do something constructive”. Although these farmers did not seem to clearly indicate that these incentives (without relationship-building) crowded-out their own autonomous motivation, they clearly emphasized the importance of relatedness and suggested a preference for programs that included incentives that was coupled with relationship-building opportunities.

The stigma of receiving “hand-outs”

Similar to some of the negative sentiments about covenant incentives, there was also a feeling among some farmers that a well-managed operation should not *need* government “hand-outs” in order to care for the land. Those who voiced this perspective, suggested that farmers who took out hand-outs had not planned ahead and taken sufficient responsibility for creating ecological resilience on their farm by themselves. These farmers suggested that “good” farmers who own productive properties are independent, autonomous, self-reliant, and competent and therefore do not need such “hand-outs”.

Summary of the Impacts of Stewardship Incentives

In summary, stewardship incentives enhanced a sense of competence and autonomy by enabling greater

conservation action. This seemed especially important amongst people with limited personal funds. In addition, these incentives seemed to create social capital and a sense of relatedness by helping to build relationships between farmers and conservationists. Although there were some negative attitudes about stewardship incentive programs that did not provide opportunities for relationship-building and some stigma about incentives as “hand-outs”, the results did not suggest that these incentives crowded-out autonomous motivation.

Strictly Educational Programs

Inexperienced landowners felt that these programs promoted more conservation action

In contrast to some of the minor impacts on management associated with covenanting and stewardship programs, participants in educational programs who had limited prior knowledge of land management (e.g., new owners of retirement properties or urban professionals working in unrelated fields), said that these programs led them to change their management practices, improve conservation attitudes and, in several cases, become interested in covenanting. On the other hand, the three relatively experienced commercial landowners who enrolled in “Land for Wildlife” did not indicate any substantial educational, management, or psychological impacts.

Landowners had positive attitudes about stewardship officers

Landowners participating in education-only PLC programs did not tend to have extensive contact with stewardship officers. Nonetheless, those landowners who were relatively inexperienced at environmental management recalled educational visits from stewardship officers in surprising detail, offering the names of the enthusiastic and knowledgeable stewardship officers, the precise phrases they used to describe the virtues of the property and details of their recommendations. These participants reflected on how visits from stewardship officers helped them connect more to their property, appreciate the rare species that were present and through field guides and plant recommendations feel empowered, competent, and confident in their decision to take on more conservation action and create better habitat for wildlife. When asked about the impacts of a site visit from a stewardship office a landowner says:

it certainly made us think: “yep, this is the right thing”. We are doing the right thing. seeing this person so passionate about this, and educating us a little bit more about what we think we already know

and what we don't know, it kinda made us go, "yep, this is the right thing to do". – Younger not-for-profit landowner

Discussion

Covenant Incentives

The results of our study suggested that incentives for covenants may have had limited impacts on both the management practices and attitudes of landowners who established covenants on their properties. These results support past research highlighting the limited conservation additionality of covenants (Moon and Cocklin 2011; Shaw and Miller 2016; Yasué and Kirkpatrick 2018). Several contextual factors may have led to these results. First, these programs did not explicitly target people whose conservation actions were limited by insufficient personal funds. As suggested elsewhere (Knowler and Bradshaw 2007; Coggan et al. 2013), the availability of personal funds influenced the likely additionality of these incentives. Second, additional management in covenanted areas may have been hindered by the not-for-profit landowner's conception of "wilderness" (Tsing 2005; Kimmerer 2013) and specifically the belief that active management is not necessary for conservation. Third, these incentives may have failed to improve attitudes about conservation for landowners because they were already fully autonomously motivated to engage in conservation on their properties. Indeed, given the history of several decades of relatively well-funded private land extension and education programs as well as the long history of environmentalism in Tasmania (Curtis and Lacy 1996; Hajkowicz 2009) and the greater likelihood that landowners in our study had already internalized conservation messages, it seems reasonable that there might be a "ceiling effect" and such incentives might not increase positive attitudes to conservation or enhance pro-environmental behaviors. A concurrent study suggested that these landowners had strong pro-environmental beliefs and values (Yasué and Kirkpatrick 2018). Finally, even within one group of landowners who seemed to have negative attitudes about covenants (i.e., multigenerational farmers) (Burton and Paragahawewa 2011; Wynne-Jones 2013), there was no evidence for crowding-in, even when substantial incentives were offered. Instead these farmers continued to believe that covenants had substantial inter-generational costs, thwarted farmer autonomy (Ruto and Garrod 2009) and also failed to achieve conservation outcomes. Farmers seemed to believe that under the responsibility of government conservation agencies, covenants would be left alone, unmanaged, and degraded.

Stewardship Incentives

Consistent with other studies (Wilson and Hart 2001; Selinske et al. 2017), landowners had largely positive perspectives on the impact of stewardship incentives. Landowners felt that these incentives helped to enable action that the landowners felt were important for their properties and for conservation. Similar to past research, landowners identified a wide range of autonomously-endorsed economic and noneconomic benefits, that collectively improve a property's commercially productive capacity, resilience, and biodiversity outcomes (Moon and Cocklin 2011; Selinske et al. 2017). While the management changes incentivised from these stewardship programs seemed to be minor changes in management practices for these already conservation-minded landowners (c.f. Curtis and Lacy 1996; Wilson and Hart 2001), we found positive psychological impacts and potent examples of crowding-in of autonomous motivation (c.f. Rode et al. 2015). As indicated elsewhere (Fish and Watkins 2003; Mathijs 2003; Morris 2008), stewardship incentive schemes can crowd-in autonomous motivation to conserve by creating opportunities for relationship-building and providing external validation and appreciation for conservation efforts (Van Hecken and Bastiaensen 2010; Rode et al. 2015).

The fact that multigenerational farmers had positive feelings about stewardship programs that only paid for a fraction (usually less than 50%) of the stewardship project costs, suggested that the negative feelings amongst multigenerational farmers about covenants was not just because of an economic cost. While stewardship incentives aligned with personal and social norms and the identity of a "good" farmer as someone who autonomously and competently runs a business that is both economically viable and sustainable (Burton 2004; McGuire et al. 2013), covenanting may have reduced feelings of autonomy and competence and conflicted with social norms within farming in ways that could not be offset by money.

No Evidence of Motivational Crowding Out

Previous research in education and the environment demonstrated the capacity of extrinsic rewards to crowd-out autonomous motivations (Gneezy et al. 2011; Festré and Garrouste 2014; Agrawal et al. 2015; Rode et al. 2015) and several participants indicated negative feelings about covenant incentives as an environmental policy and some negative feelings about stewardship incentives as hand-outs. However, our results did not suggest that these incentives crowded-out autonomous motivation. This result was surprising because of the tremendous inequity in incentives offered especially to people with covenants, as well as the high levels of autonomous motivation (as reported by most of our participants). Past

research has suggested that perceptions of unfairness in the amount of incentives (Gneezy et al. 2011; Pascual et al. 2014) and high levels of initial autonomous motivation can lead to situations in which payments are especially likely to crowd-out autonomous (Deci et al. 2001; Promberger and Marteau 2013). One possible explanation is that because of the strong prior commitment to stewardship and the pro-environmental identities of many landowners in our study, the required changes in management (e.g., getting a covenant or planting trees) were not experienced by landholders as “controlling”. This is especially true given that landowners often indicated that they would have done these tasks on their own. As a loss of internal locus of control is one of the main mechanisms that is thought to lead to crowding-out, it is reasonable that these incentives simply had no negative effects (Deci et al. 2001; Gneezy et al. 2011; Rode et al. 2015). Furthermore, crowding-out requires that an individual feels a conflict-of-interest between individual self-interests (e.g., running more sheep on a property) and collective benefits (e.g., retaining trees for carbon sequestration) and again because landowners were enthusiastic active participants in conservation, there was likely no conflict-of-interest (Bowles 2008; Promberger and Marteau 2013). Similar results have been observed in studies in the health sciences where incentives to promote healthy behaviors did not crowd-out intrinsic motivations (Promberger and Marteau 2013).

The Importance of Relationship-building

One of the key contextual factors that seemed to influence whether landowners perceive incentives as crowding-in seemed to relate to the strength of the relationship between landowners and conservationists. Landowners perceived a problem when they felt that conservation organizations were trying to solve problems from a distance with money, rather than by building face-to-face relationships with local communities in local contexts (Sobels et al. 2001; Sharp and Curtis 2014). Although the primary aim of the present study was to explore the impacts of financial incentives, throughout several interviews, landowners stressed the importance of trusting relationships for facilitating changes in behaviors and attitudes. The need for conservation to be founded on socially meaningful and respectful relationships (Sobels et al. 2001; Sharp and Curtis 2014) was evident in participants' disdain for having money “thrown” at them by remote bureaucrats in Canberra with its implications that landowners can be bought.

Consistent with previous research (Sutherland et al. 2013; Sharp and Curtis 2014), the interviewees suggested that the interpersonal skills and local knowledge of stewardship officers from governmental and nongovernmental organizations had a profound effect on the experience of PLC programs and the perceived and actual impacts of

incentives. The characteristics of these stewardship officers seemed to matter more to landholders than their organization or the specific details of the incentives. Specific autonomy-supportive stewardship officers were particularly effective at building trust and ensuring that landowners felt supported, heard, and respected. They did this, for example, by patiently explaining the justification or reasoning behind program characteristics, empathizing with negative feelings that landowners might have about conservation, such as the impact of native animals on crops, ensuring that they understood the land management goals of the landowner, and explaining how the work on their individual properties contributed to the larger collective goal of conserving habitat in Tasmania (or Australia). Past research has suggested that such autonomy-supportive educators (Reeve et al. 1999; Reeve 2006) help to foster feelings of autonomy, competence and relatedness and enhance autonomous motivation. In contrast, landowners expressed negative perspectives about conservation activity and stewardship programs if they perceived stewardship officers to be ill-informed, patronizing, unavailable, or controlling. Although only few landowners spoke about negative experiences with stewardship officers, one landowner described how a particular stewardship officer associated with covenants “drops in to check that we're not doing anything terrible.... like they were the police coming to check whether you're doing wrong on your backyard”. For this landowner, this interaction with a stewardship officer who communicated distrust of her and her conservation efforts (Gneezy et al. 2011) seemed to crowd-out her motivation to engage in covenants.

In the context of the polarised environmental politics of Tasmania, skilled stewardship officers became long-term and trusted advisors to entire communities and helped to shift attitudes and promote autonomous motivation towards conservation in participants by emphasizing the idea that farmers (and other commercial landholders) and conservationists were working together towards common goals. Indeed, these stewardship officers and the social capital that they created across many years and even multiple generations may have helped to build a social context that is resilient to motivational crowding. These results affirmed the power of relationship-building (Sobels et al. 2001; Mathijs 2003) across all three types of PLC program to influence the attitudes and conservation actions of landowners.

In addition to relationships between landowners and stewardship officers, landowners indicated the value of creating PLC programs (with or without incentives) that helped to build relationships amongst landowners. Even though farmers were often highly connected with neighbors through extensive social networks in rural communities (Mathijs 2003), it seemed that the farmers still valued conservation programs that engendered further social capital. Some farmers spoke negatively of conservation

programs that targeted individuals (e.g., covenanting programs), contrasting them with more collectivist, community-based approaches, such as Australia's Landcare program (Sobels et al. 2001). In comparison to farmers, aside from landowners who were connected to conservation organizations through past employment, not-for-profit landowners seemed much less connected to their local communities, to other conservation landowners, and to conservation organizations. Thus, these landowners frequently spoke about feeling alone in their conservation efforts and identified a need for more educational programs to facilitate peer-to-peer learning through workshops on weed control, guided visits to each other's properties or more visits from stewardship officers. Although these landowners tended to have less knowledge about land management compared to experienced farmers, it is notable that both these inexperienced not-for-profit landowners and farmers affirmed the value of more face-to-face interaction between landowners and stewardship officers.

Recommendations for Future Programs

The results suggested that although incentives can play a role in promoting conservation action through stewardship incentives, incentives on their own may fail to support the more autonomous motivation in landowners and promote enduring change. This finding is exemplified by quotes from a young, multigenerational farmer (top), and older not-for-profit landowner (bottom):

It's actually more than money, as well. There's that intrinsic type value you get out of being recognized for doing something that's almost altruistic in a way. And I think that's underrated in a lot of this stuff. It's very much financed-based... they focus at the hip pocket rather than the heart in a way....If you really want to create change, you can either do it by paying people to change, or a mix of paying them and making them believe that they're doing a really good thing. ...But if you acknowledge the fact that there is value in the project, promote that value to people, beyond the financial, then I think you'd end up with, stronger outcomes.

I think it is a little tricky because payments get people doing something but if it is not in the spirit, you are not agreeing on the outcome that you want, it is just somebody is doing it because somebody is paying them to do it, you aren't going to get any change in belief or change in behavior, which ultimately will undue whatever it is that you are doing.

The results from our study support the following five recommendations for increasing the effectiveness of PLC programs. First, target participants based on financial need. Second, invest in training and retaining autonomy-supportive and well-informed stewardship officers. Third, emphasize relationship-building alongside incentives. Fourth, support educational and community-building programs for

inexperienced not-for-profit conservation landowners. Fifth, assess conservation success on the basis of changes in conservation action and attitudes rather than enrollment into covenanting programs (Burton and Schwarz 2013). Sixth, monitor intergenerational impacts of PLC programs.

Limitations of the Study

Despite intensive and purposeful efforts to recruit a wide range of participants, our interview sample is necessarily comprised of landowners willing to talk about conservation on their property. Thus, there could be a pool of solitary, extrinsically motivated anti-environmentalist landowners engaged in PLC programs that we were not able to interview. Indeed, both conservationists and not-for-profit landowners suggested that these types of landowners may exist. However, some participant landowners who were described (in confidence) as being extrinsically motivated and self-interested by other participants demonstrated autonomous motivation in our interviews. Although the potential for biases in the participant pool is irreducible, research indicates that people, including those in conservation organizations, tend to underestimate intrinsic values (such as caring for the environment) in *other* people or groups of people (Brewer 1999). In addition another piece of evidence that suggests that the participants actually had intrinsic values is that past research (globally and in Tasmania) suggested that intrinsic values such as caring for the environment tends to be high in most people (Lucas 2018; Crompton and Kasser 2010; Baur et al. 2016) even if such values are not always apparent in undefined decisions.

It is possible that social desirability bias (Krumpal 2013), or the need of participants to be perceived favorably by researchers and others, may have affected our results for at least some of the landowners. In particular, not-for-profit landowners quickly dismissed the role of economic incentives in their behavior, switching discussion towards more philosophical or moral perspectives. This may have been because some participants felt uneasy about admitting the importance of financial incentives in their conservation activities (Kretzmann 1992; Tetlock et al. 2000) due to the social stigma associated with financial incentives for some types of social goods (Kretzmann 1992; Ariely et al. 2009).

Finally, in terms of the generalizability of the study's results, it is important to note some of the characteristics of the Tasmanian context. The long history of polarizing green politics in Tasmania (Reynolds 2012), the decades of relatively extensive PLC programs aimed to influence the attitudes, perspectives and norms of rural landowners within Tasmania (Mooney and Defenderfer 2010; Iftekhar et al. 2014), as well as the small population size, economic marginality in the national context, and substantial opportunities for social networks to influence attitudes to

conservation, may reduce generalizability. Nonetheless, our results are likely to be relevant to other regions and resource management contexts in the world in which there has been similarly extensive engagement with conservation programs on private or communal land.

Conclusions

The present study sought to understand the socio-psychological contexts and consequences of the use of financial incentives in PLC programs. One-off covenant incentives may have increased the number of covenants, but did not appear to change management action nor cultivate more favorable attitudes towards conservation, conservationists or covenants. On the other hand, incentives for ongoing stewardship activities, coupled with autonomy-supportive stewardship officers helped increase the extent and speed of implementation of conservation activities, and build enduring relationships between landowners, conservation professionals, and organizations (Sobels et al. 2001; Wilson and Hart 2001).

Our data suggest that neither crowding-in nor crowding-out of autonomous motivations by extrinsic rewards are inevitable consequences of incentivised PLC programs, although these effects may well be context-specific. Autonomous motivation, founded on the life histories, values and group-based identities of individuals, is not only shaped by program design (including financial incentives (Cetas and Yasué 2016)) but also by the personal characteristics of stewardship officers (Reeve et al. 1999; Sharp and Curtis 2014). Strong personal relationship between conservation professionals and landowners are critical to shifting values, attitudes and behaviors and engendering autonomously motivated conservation action (Musters et al. 2001; Berkes 2009; Gutiérrez et al. 2011; Selinske et al. 2017). Stewardship officers can do what incentives on their own could not and helped to shift values, attitudes and behaviors in order to enable durable conservation capacity and outcomes (Wilson and Hart 2001).

Deepening understanding of the psychological dimensions of PLC projects is timely given the large scale of various financial incentive schemes for conservation globally (Armstrong et al. 2012; Iftekhar et al. 2014), the lack of consensus on the effectiveness and additionality of incentives for conservation (Knowler and Bradshaw 2007; Shaw and Miller 2016; Borner et al. 2017) and the ongoing shift toward neoliberal market-based conservation approaches that rely heavily on incentives to shift behavior (Castree 2007; Igoe and Brockington 2007; Hajkowicz 2009). Our results and the results of others (Lucas 2018; Schwartz et al. 2012; Baur et al. 2016) suggest that autonomously motivated landowners may constitute a majority in PLC

(Crompton and Kasser 2010). The limited additionality of PLC schemes (Shaw and Miller 2016; Alarcon et al. 2017), as well as the potential adverse impacts of incentives on conservation motivation (Bowles 2008; Gneezy et al. 2011), also suggest the need to avoid assuming that people are simply slavishly responsive to economic signals (Hajkowicz 2009). Although concerns about the ecological impacts of conservation programs contributed to the recent shift in conservation towards market-based schemes (Ferraro and Kiss 2002; Igoe and Brockington 2007), ignoring the social and psychological contexts that influence the motivational landscape of conservation seems likely to adversely affect the efficacy, efficiency and additionality of such schemes (Morris 2008; Hajkowicz 2009). Thus, designers of future market-based schemes should consider the complex and nuanced motivations of *real* people, who respond to much more than economic signals.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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