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**Smart Prosperity Institute**

(formerly Sustainable Prosperity) is a national research network and policy think tank based at the University of Ottawa. We deliver world-class research and work with public and private partners – all to advance practical policies and market solutions for a stronger, cleaner economy.

# **ECONOMIC INSTRUMENTS FOR PROTECTING SPECIES AT RISK ON PRIVATE LAND**

## **Key Messages**

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- Population trends for species at risk (SAR) are troubling, and further population declines are likely without intervention from policymakers.
- Many species at risk are found on private land, but federal and provincial legislative efforts are not effectively conserving species at risk on these lands, making proactive partnerships with landowners essential to recovering species at risk.
- The main threats to SAR include habitat loss from residential and commercial development, natural systems modification, and human intrusion and disturbance. Many of these threats appear to stem from operations on private land. Other important threats occurring on private land include invasive and problematic species, genes and diseases, point and nonpoint source pollution, biological resource use, and agriculture.
- The choice of policy instrument for SAR conservation needs to be informed by the degree to which the conservation measure generates public and private benefits. In particular, economic instruments (payment schemes) should be used for practices which generate significant net benefits to the public, but which generate negative private net benefits for landowners.

## Acknowledgments

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- Governments are still making limited use of economic instruments for SAR recovery on private land, despite stakeholder perceptions that they are effective and would enjoy high levels of public support. The historic investments in nature protection announced in Budget 2018 provide policy makers with an opportunity to change this.
- By compensating landowners for the SAR protection benefits that they are providing to society, economic instruments have a major role to play in fostering cost-effective SAR recovery on private land. For instance, studies of reverse auctions have found that they can lead to substantial cost savings relative to fixed payment schemes – ranging from 16 to 315 per cent. Expanding on these economic instruments and fine-tuning them has real potential to improve SAR recovery outcomes.
- We outline some preliminary lessons learned from two economic instruments and two incentive programs which contribute to SAR recovery on private land: conservation easements and payment for ecological service schemes, as well as the Ecological Gifts Program and the Natural Areas Conservation Program. We also provide some suggestions on how these tools and programs could be strengthened to scale up and enhance SAR recovery.
- The federal government should consider establishing mechanisms through which landowners adopting economic instruments for SAR conservation could easily 'opt in' to conservation agreements under section 11 of Canada's *Species at Risk Act*.
- Key barriers to using economic instruments for species at risk conservation on private land include transaction and monitoring costs, landowners' perceptions of the conservation program, and concerns that economic incentives might 'crowd out' voluntary conservation actions. However, these barriers need to be understood in context and viable solutions exist for each of them.
- Implications for policy makers include designing explicitly targeted incentive programs, balancing trade-offs between targeted, stringent programs and their transaction costs to ensure a critical mass of participation, and the need to implement economic instruments as field experiments or quasi-experiments, to ensure the best value for money.

## Cover image

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# INTRODUCTION

Canadians care about wildlife and recognize its importance. Recent polling shows that an overwhelming majority of Canadians support the federal government's efforts to recover species at risk (SAR). However, they want it to be done in a way that is broadly consistent with their economic aspirations and that respects private property rights.<sup>1</sup> This is both the challenge and the opportunity – to improve outcomes for imperilled species while allowing responsible levels of development and respecting the rights of private property owners.

More than a decade has passed since Canada's *Species at Risk Act* (SARA) passed into law. The time is right to take stock of current progress and challenges. The Schad Foundation initiated this research to help identify the policy tools that could enable governments, industry and civil society to prioritize conservation decision-making and investments, and improve recovery outcomes. It draws upon multiple sources of insight including a workshop with key stakeholders, a literature review, interviews with SAR recovery experts, and an online survey administered to over 100 informants in academia, government, industry and ENGOs.

The research uncovers a collection of policy tools and incentives that, while underused to date, show significant promise for better engaging private landowners, resource developers, governments and stakeholders in solutions that are broadly compatible with both species recovery and private economic interests. This policy brief focuses on economic tools for protecting species at risk on private land.

**Stewardship on private land will play a key role in species at risk recovery, since many of them are found on private land, and many threats to species at risk stem from activities on private land.**

## THE ISSUE

### **Why stewardship on private land is essential to recovering species at risk**

Within Canada, population trends for most imperilled species are sobering, with one recent study finding that, of the more than 350 imperilled species assessed by the Committee on the Status of Endangered Wildlife in Canada which have had status reassessments from 1977-2013, the status of over 85% is either unchanged or deteriorated.<sup>2</sup> Environment and Climate Change Canada also found that, of the 112 SAR Recovery Strategies and Management Plans that have outlined population recovery objectives and re-assessed SAR population trends over time, 43 of them show trends consistent and these objectives, but evidence is mixed for 11 species, and 46 species still have population trends inconsistent with recovery objectives. The remaining 23 species have insufficient data for tracking their population trends.<sup>3</sup>

We know that stewardship on private land will play a key role in species at risk recovery, since many SAR have their residences or habitat on private land, and many threats to SAR also stem from activities on private land. Previous studies have shown that most species at risk are found in southern Canada, where private land ownership predominates.<sup>4</sup> For instance, an analysis of 513 imperilled species which had digitized range maps found that approximately 90% of them occur within Canada's agricultural extent.<sup>5</sup> And protected areas in southern Canada are often right next to private lands, meaning that policymakers will need to collaborate with these landowners to recover SAR.<sup>6</sup>

## Restrictive regulations fail to provide positive incentives for species at risk recovery.

Recent studies broadly agree that the main threats to Canadian SAR include habitat loss from residential and commercial development, natural systems modification, and human intrusion and disturbance.<sup>7</sup> Many of these threats appear to stem from operations on private land. Other important threats occurring on private land include invasive and problematic species, genes and diseases, biological resource use, point and non-point source pollution, and agriculture.<sup>8</sup>

But too little action is being taken to protect SAR from habitat destruction and other threats occurring on private land. While SARA prohibits killing, harming or harassing all listed species, for terrestrial species SARA's prohibitions generally apply only to individuals, their residences and their critical habitat (CH) on federal crown land.<sup>9</sup> By contrast, all listed aquatic species (and their residences and CH) are protected under SARA. For migratory bird species listed under the *Migratory Birds Convention Act*, SARA's prohibitions apply to individuals and their residences throughout the country, but not necessarily their CH. The upshot is that unless the federal government uses the backstop provisions contained in SARA, the majority of terrestrial species at risk will likely remain *de facto* unprotected on private land.<sup>10</sup>

### Policymakers are making limited use of economic instruments and incentives on private land

A collaborative and incentives-based approach to SAR conservation on private land is needed to tackle these challenges. Many of the environmental impacts from economic activities on private land – such as agriculture – are so diffuse that direct regulation would be prohibitively costly to monitor and enforce.<sup>11</sup> By making the occurrence of SAR on private property a liability for landowners, direct regulations could also seriously damage the legitimacy of SAR recovery activities, since landowners may decide to secretly kill the SAR on their property instead (“shoot, shovel, and shut up”).<sup>12</sup> Restrictive regulations also fail to provide positive incentives for SAR recovery or for continuous improvement.<sup>13</sup>

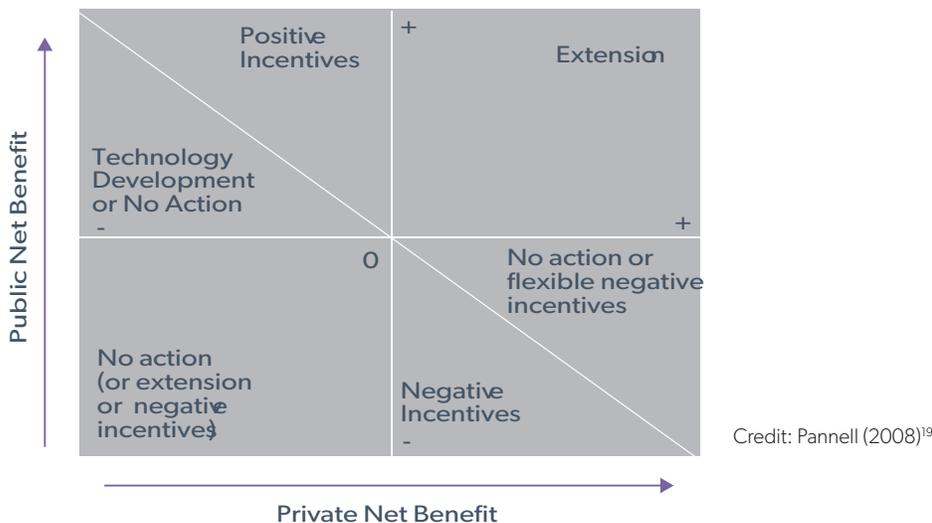
The federal government currently has several incentive programs in place for encouraging SAR management and recovery on private land, including the Habitat Stewardship Program (HSP), the Species at Risk Partnerships on Agricultural Lands (SARPAL), and the Species at Risk Farm Incentive Program (SARFIP). There are also several funding streams for beneficial management practice (BMP) adoption under federal, provincial and territorial (F/P/T) agricultural policy frameworks (e.g. Growing Forward 2, the Canadian Agricultural Partnership) which may also contribute SAR recovery. But many of these SAR stewardship programs face tight budgets, and data on their overall contribution to SAR recovery is limited.<sup>14</sup> Moreover, many of the SAR recovery activities funded by F/P/T stewardship programs consist of cost-share programs for BMP adoption, or voluntary farmer outreach and extension activities.<sup>15</sup> While there are cases where these approaches work quite well, they may be less suited to SAR recovery than economic instruments.\*

In contrast to some economic instruments, extension programs and subsidies for BMP adoption do not attempt to compensate landowners for the opportunity costs of their management actions – which can seriously limit the uptake of BMPs on private land.<sup>17</sup> The public:private benefits framework helps underline why programs using positive incentives – many of which are implemented via economic instruments – may show greater promise for recovering SAR on private land (Fig. 1).

\* For instance, one U.S. study found that cost sharing was less effective in incentivizing species at risk conservation compared to compensation payments or regulatory assurances. See Langpap, C. (2006) *Conservation of endangered species: can incentives work for private landowners?*, *Ecological Economics* 57(4): 558–72.

The framework suggests that practices with positive public net benefits and positive private net benefits are best promoted through extension programs (top-right quadrant of Fig. 1) rather than economic instruments, since landholders would be more willing to pilot or adopt the practice after learning about the private economic benefits. On the other hand, practices with high public net benefits but negative private net benefits are best promoted through economic instruments ('positive incentives'; see the top-left quadrant of Fig. 1)<sup>18</sup> – as is likely the case with numerous SAR conservation activities on private land\*.

**Figure 1: Public-private benefits framework**



More generally, strictly voluntary programs for providing public goods (such as SAR habitat) run the risk of low participation rates, leading to lower overall environmental benefits,<sup>20</sup> in part because some landowners may view them as unfair. For instance, a survey of landowners in rural Saskatchewan found that respondents strongly believed that it is not fair to ask them to bear the costs of species at risk protection. They instead believed that they should be compensated for their stewardship measures.<sup>21</sup>

For similar reasons, while cost-share programs may induce some relatively straightforward SAR conservation activities such as installing livestock fencing, additional payments may be needed to compensate landowners for engaging in more costly or labour-intensive activities such as conservation easements (for habitat protection or other purposes), residence (or habitat) creation and enhancement, or wetland restoration.<sup>22</sup> Economic instruments such as appropriately priced fee simple acquisition, conservation easements, or payments for environmental service schemes could help address this gap.

\*Including public and private transaction costs would shift the boundary lines further to the right for both positive incentives and extension, with the boundary lines for positive incentives partially shifting into the top right quadrant of Fig. 1 (since private net benefits are now outweighed by the transaction costs in certain cases, but positive incentives could still compensate for these costs if public net benefits are sufficiently high). The economic viability of extension projects is generally much more sensitive to increased transaction costs than projects using positive incentives. For discussion, see Pannell, D.J., Roberts, A., Park, G., and Alexander, J. (2013) *Improving Environmental Decisions: A Transaction-costs Story*, *Ecological Economics*, 88: 244-252, especially section 5.2 and Figs. 4-6.

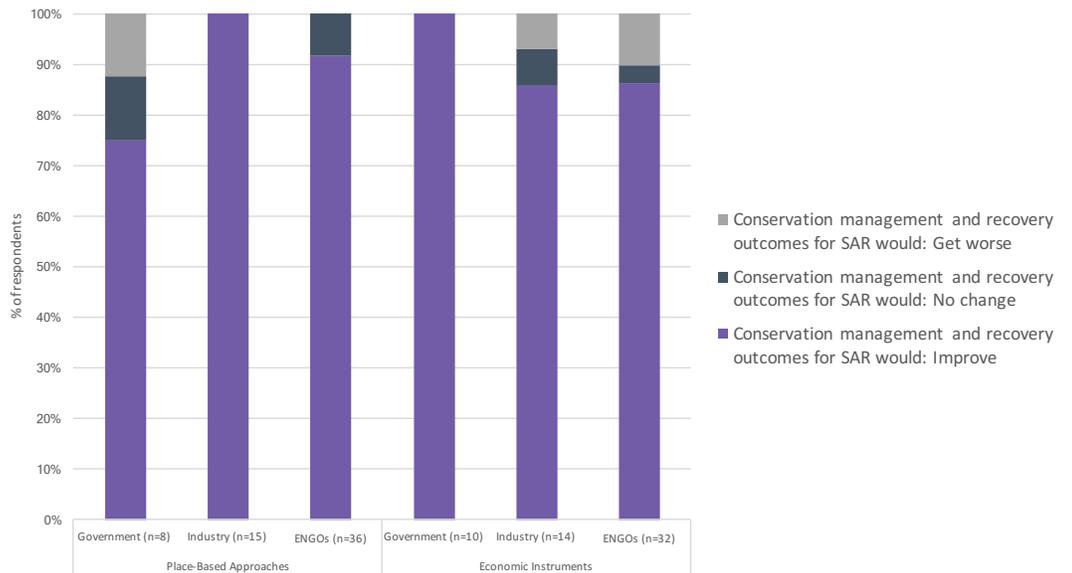
### Box 1: Economic instruments for recovering species at risk

Economic instruments use monetary values to internalize the social costs and benefits of economic activity. Examples in the SAR conservation context include:

- Regulatory price signals (e.g. direct or indirect taxes on point and nonpoint source pollution);
- Targeted environmental subsidies (such as payment for ecological service schemes or tax credits for conservation easements on ecologically significant land);
- Direct markets for SAR habitat (e.g. conservation easements and fee simple acquisition);
- Reverse auctions (see Box 2);
- Tradeable permits (e.g. offsets for activities harming SAR and their habitat, or tradeable water quality permits).<sup>16</sup>

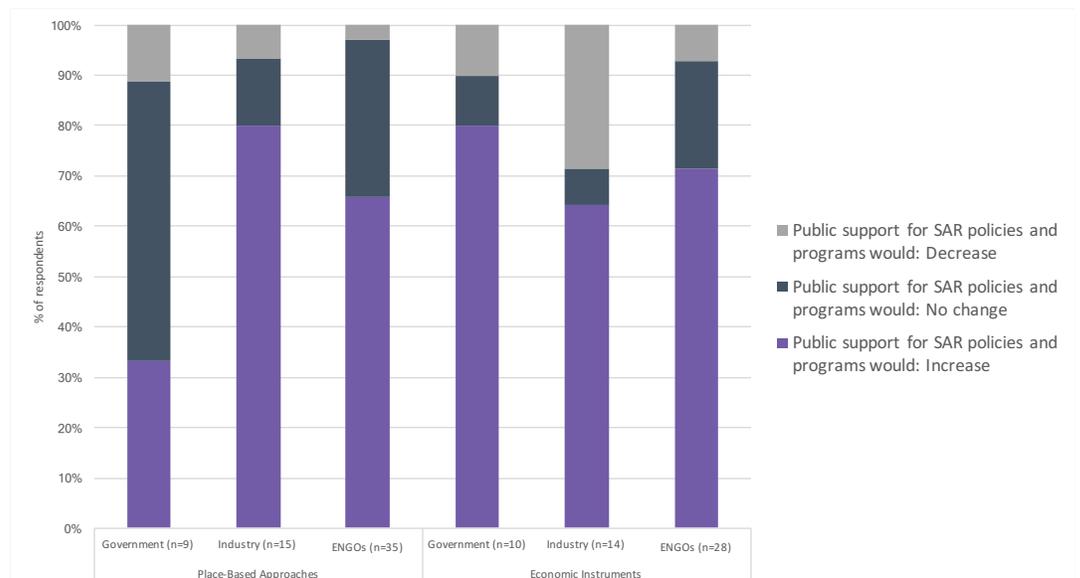
The good news is that the vast majority of stakeholders in the species at risk recovery space are very open to making greater use of economic instruments. Canadian respondents to Smart Prosperity Institute’s species at risk survey from government, industry, ENGOs and academia overwhelmingly agreed that using economic instruments would improve overall SAR management and recovery outcomes (Fig. 2). They were also in strong agreement that these tools would increase overall public support for SAR protection (Fig. 3),<sup>23</sup> and subsequently should be further piloted and tested.

**Figure 2: Canadian respondent perceptions of SAR conservation and recovery outcomes from economic instruments**



Credit: Smart Prosperity Institute, Species at Risk Survey

**Figure 3: Canadian respondent perceptions of overall public support for SAR policies and programs economic if instruments were used more frequently**



Credit: Smart Prosperity Institute, Species at Risk Survey

# TOOLS FOR INCENTIVIZING SPECIES AT RISK PROTECTION ON PRIVATE LANDS

Federal, provincial and territorial governments and conservation organizations are already using various incentive tools and programs to protect private land with significant conservation value (including SAR habitat), such as payment for environmental service schemes and conservation easements – including easements donated under the Ecological Gifts Program, and easements acquired by land trusts through the Natural Areas Conservation Program.<sup>24</sup>

Experience with these tools and programs in other conservation contexts suggest that they have the potential to cost-effectively protect and recover SAR on private land,<sup>25</sup> although policy makers are still making limited use of them. Many of these tools and programs are leveraging a mix of public and private funds, and this model could be expanded for further impact.

To ensure the best value for money, SAR conservation programs should attempt to maximize the benefits to SAR relative to the conservation budget,<sup>26</sup> and should include some form of counterfactual – such as establishing a control group, or specifying a baseline risk of habitat loss or other threats to SAR – for evaluating effectiveness.<sup>27</sup>

This section summarizes the current knowledge base on how two SAR conservation tools (conservation easements and payment for environmental service schemes) and two programs (the Ecological Gifts Program and the Natural Areas Conservation Program) have been implemented to date in Canada. It draws on evidence from multiple jurisdictions to discuss existing findings on their effectiveness (and their limitations), and highlights some considerations for better tailoring these tools to recover SAR.

Our overarching recommendation is for the federal government to consider outlining clear criteria which, if satisfied, would allow landowners adopting economic instruments to easily “opt-in” to section 11 conservation agreements.\* These agreements would require signatories to specify the SAR found on the land subject to the agreement, along with the agreed-upon SAR protection measures and their anticipated effects.



**Greater sage grouse, prairie population** (*Centrocercus urophasianus urophasianus*) is listed as endangered under the Species at Risk Act. Within Canada, its range encompasses southeastern Alberta and southwestern Saskatchewan. Source: Species at Risk registry.

\* Section 11 of the *Species at Risk Act* enables a competent Minister (the Minister of Environment, the Minister of Fisheries and Oceans, or the Minister responsible for the Parks Canada Agency) to sign conservation agreements with provincial/territorial governments, organizations or individuals. These agreements formally recognize actions that the signatories have taken to “benefit species at risk or enhance their survival in the wild”, including protection of habitat or critical habitat. Section 11 conservation agreements have significant potential as a tool for ensuring effective protection of species at risk on private land.

## Box 2: Reverse auctions for conservation easements in the Canadian prairies<sup>37</sup>

A field experiment using reverse auctions to target landowners for perpetual conservation easements in wetlands and grasslands was conducted in Alberta, Manitoba and Saskatchewan on behalf of Ducks Unlimited Canada (DUC). In a reverse auction, the government or conservation organization specifies the desired level of an environmental good or service (such as SAR habitat), and then encourages private landowners to submit their bids for providing these services. Having landowners compete to provide the service incentivizes them to reveal their opportunity costs for conserving habitat or ecologically sensitive areas – information which is helpful for maximizing the cost-effectiveness of the easement program, but which is inaccessible to conservation organizations or policymakers.<sup>38</sup>

Participants' bids were graded according to their share of the fair market value of the land, and the auction administrators also announced that they would use a reserve price to grade bids (this reserve price was concealed from participants). The auction enabled the authors to construct a supply curve for conservation easements, and this analytical approach enabled DUC to reap considerable cost savings compared to a fixed price scheme for acquiring easements. Ducks Unlimited Canada subsequently used this approach to set maximum bid values for their easement program. At the time of the article's publication, this had helped DUC increase the number of easements acquired each year by more than a factor of ten, leading to a total of approximately 1 million hectares of conserved habitat.

**Conservation easements (or covenants or servitudes)\*** are voluntary legal agreements between a landowner and the easement holder (which may be a government or a conservation organization), in which the landowner commits to using the land in ways agreed to in the easement (such as wildlife habitat protection) while retaining formal ownership rights.<sup>28</sup> Easements can be purchased, donated, or a combination of the two in which the land owner sells the easement for less than its fair market value (commonly known as "split receipting").<sup>29</sup> Conservation easements are a widely used tool for protecting land with significant conservation value, and could be harnessed to further benefit SAR.

Several lines of evidence suggest that easements have the potential to be a powerful tool for SAR conservation. One modelling study found that investing \$100 million in targeted easements across several mid-western and northwestern U.S. states could reduce potential future losses of sage grouse on farmland by around 80%, resulting in only 1% of the population still being threatened by cropland expansion.<sup>30</sup> Another modelling study concluded that spatially targeted conservation easements in tandem with core managed areas can reduce sage grouse loss more effectively than exclusively relying on the latter.<sup>31</sup> And another in Manitoba found that land with high suitability for waterfowl habitat was more likely to be targeted for easements.<sup>32</sup>

Other studies in the United States and the Canadian prairies suggest that agricultural easements generally target habitats that are at higher risk of conversion or intensification (as proxied by land value), rather than economically marginal farmland, which indicates that they are probably providing additional protection to SAR habitat.<sup>33</sup> Easements also appear to scale more cost-effectively over large landscapes compared to payment for environmental service schemes or fee simple acquisition.<sup>34</sup>

There are several methods for setting the price of easements, each with their own strengths and weaknesses. Reverse auctions are one tool which can potentially drive down the costs of purchasing easements (see Box 2). For instance, one review found that, depending on the project and how the auction was designed, reverse auctions can lead to cost savings ranging from 16 to 315 per cent relative to fixed payment schemes.<sup>35</sup> On the other hand, reverse auctions tend to have high transaction costs compared to other approaches. If these transaction costs are too high they can discourage participation, which may lead to lower overall environmental benefits and undermine their potential for improving cost-effectiveness.<sup>36</sup> Further piloting and experimentation is needed to determine which payment approaches work best in which contexts.

\* For simplicity, we will refer to all three instruments as "easements" in this document.

Although conservation easements appear to be a promising instrument for conserving SAR, there are some data gaps which prevent a full assessment of their conservation effectiveness and cost-effectiveness. Policymakers should strongly consider requiring easements signed for purposes of SAR conservation to transparently document how the terms of the easement contribute to SAR protection objectives. They should also consider making data on the value of purchased and donated easement accessible to researchers and analysts.<sup>\*39</sup>

Further scaling up the use of easements for SAR conservation will require creativity and ingenuity, since several sources have mentioned that landowners in some regions are reluctant to further adopt permanent conservation easements.<sup>40</sup> Increasing easement adoption for SAR conservation will likely require a smart combination of approaches which: (i) harness landowners' pro-conservation attitudes and social norms;<sup>41</sup> (ii) increase payments for land containing SAR habitat (including bonuses for groups of landowners providing agglomerations of habitat); (iii) use flexible mechanisms for lowering implementation costs (such as reverse auctions or revolving land conservation programs – see Box 3) where appropriate. Policymakers could also further pilot the use of temporary easements, similar to the South of the Divide Conservation Action Program, Inc.<sup>42</sup>

**Payment for environmental service (PES)** schemes are another potential policy instrument for recovering SAR which should be further tested, especially since some landowners might be more willing to adopt PES schemes instead of permanent conservation easements. Such schemes have been considered by the Alternative Land Use Services Program for conserving grassland birds in Ontario.<sup>44</sup>

PES schemes could be designed to provide rewards for protecting and enhancing SAR habitat or their residences on private land, or for remediating non-habitat related threats to SAR such as non-point source pollution, or invasive and problematic species. Although PES schemes have become increasingly popular in recent decades, their impacts on biodiversity generally and SAR in particular are less well understood.

A review of studies from Europe suggests that PES schemes are most effective for biodiversity conservation when they explicitly target and tailor their prescribed management actions to SAR and their biological needs. By contrast, PES schemes requiring broad-based management practices often fail to help rare or imperilled species<sup>45</sup> and frequently benefit common species instead.<sup>46</sup> This suggests that PES schemes for recovering SAR are more likely to be successful if they are based on priority recovery actions identified in the species' recovery strategies and action plans. The SARFIP and the HSP – along with their provincial cognates, and related programs under F/P agricultural policy frameworks – are natural vehicles for piloting such an approach to PES schemes. However, implementing some of these PES schemes would require compensating landowners for their opportunity costs from measures such as taking land out of production, or reducing agricultural intensification – which would require changing some of the eligibility criteria under the SARFIP and HSP programs.<sup>47</sup>

\* Requiring these researchers and analysts to sign non-disclosure agreements – which prevent them from publishing the data in a format wherein land owners could easily be identified – would help ensure that these data are accessed, analyzed and published in a manner that respects the confidentiality of data providers.

### Box 3: Ducks Unlimited Canada's Revolving Land Conservation Program<sup>43</sup>

Ducks Unlimited Canada's (DUC) innovative revolving land conservation program acquires properties containing degraded or converted grasslands or wetlands, which DUC subsequently restores and secures through a permanent conservation easement. The land is then sold to agricultural landholders and the public through an online auction. The program was developed by DUC as a tool for restoring and permanently easing grasslands and wetlands, with the hope that it would be more cost-effective than a continued series of renewable easements.

Preliminary financial analysis suggests that revolving funds are most likely to be cost-effective if proponents are able to access low-interest finance for purchasing the property, and if the land is rented to farmers during the restoration phase. Under other conditions, temporary easements or permanent easements secured through more conventional means may be more cost-effective. Although decisions about whether to pursue the revolving land conservation strategy need to be made on a case-by-case basis, the program provides an important model for land restoration and should be considered in every conservation policymaker's toolkit.



**Bobolink** (*Dolichonyx oryzivorus*) is listed as threatened under the Species at Risk Act. Within Canada, its range spans all provinces, but not the territories.

Source: Species at Risk registry.

On the other hand, PES schemes might be an effective means for managing SAR on smaller parcels of private land. One study estimated that PES schemes are generally more cost-effective than easements or fee simple acquisition for managing ecosystem services on smaller parcels of land (e.g. less than or greater to 3 acres).<sup>48</sup> Although the marginal cost of managing additional land increases more rapidly under PES schemes compared to easements, PES remained more cost-effective than outright purchase for both large and small projects.<sup>49</sup>

The **Ecological Gifts Program (EGP)** enables any individual or corporation to donate land, or an eligible right or interest in the land (e.g. conservation easement, covenant or real servitude) to a qualified recipient that has been certified by the Minister of Environment and Climate Change or a delegated certification authority.<sup>50</sup> The value of the eco-gift is assessed in terms of the fair market value of the donated land. The EGP has spurred a significant volume of donations over the program's lifetime – from 1995 and October 31, 2016, the EGP has received 1260 eco-gifts across Canada.<sup>51</sup> These lands have been valued at more than \$807 million and protect over 180,000 hectares of wildlife habitat,<sup>52</sup> including habitat for at least sixteen SAR.<sup>53</sup>

Although these trends seem encouraging, to our knowledge there has been no formal assessment of the EGP's (or similar programs in other jurisdictions') conservation effectiveness or cost-effectiveness. But a recent study made a number of recommendations for improving tax credit programs for donated conservation easements which may also have implications for SAR recovery. These recommendations include improving landowner targeting, or requiring donated lands to exceed certain environmental quality thresholds.<sup>54</sup> For certain SAR, habitat suitability models or environmental benefits indexes could potentially contribute to these targeting measures. These have already been used to assess the value of conservation easements in several conservation programs.<sup>55</sup>

As with conservation easements, certain key pieces of information for formally assessing the cost-effectiveness of EGP tax credits for SAR conservation are inaccessible to researchers and evaluators. To some extent this includes the ecological value of the potential SAR habitat donated through the easement, as discussed previously. Moreover, data on the economic value of individual gift donations are confidential and are not shared with the research community. Improving documentation and access to data (through signed non-disclosure agreements) on the economic and ecological value of the donated land is essential for making informed decisions on how to spend scarce public funds for conservation, be it for SAR conservation or other environmental benefits.

Formally reviewing the EGP in light of these considerations should be an important priority for policymakers.<sup>56</sup> A program review also provides an opportunity to further leverage the EGP in ways that enhance SAR recovery. For instance, policymakers could consider introducing additional regional criteria for all provinces and territories to render land containing SAR residences or CH eligible in the EGP program. Improving the documentation on potential SAR conservation values of the donated land could also go some way towards satisfying the environmental quality assurances mentioned previously. Finally, the federal government could also consider providing a premium tax incentive for donated lands known to contain SAR.<sup>57</sup>

The **Natural Areas Conservation Program** also contributes to SAR conservation objectives. The Program was established in 2007 as a public-private partnership between the federal government, the Nature Conservancy of Canada, and other

ENGO partners, with the stated goal of protecting ecologically sensitive lands at risk, focusing on southern Canada. From the years 2007-2016, the federal government has contributed \$277.5 million to the program, and the program has leveraged an additional \$500 million from provincial governments, industry and philanthropic partners. These funds have enabled the program to acquire 418,000 hectares of land, including habitat for 181 imperilled species.<sup>58</sup>

While any assessment of the effectiveness of the Natural Areas Conservation Program's role in SAR conservation needs to keep in mind its broader conservation mandate, attempting to map and quantify the overall hectareage of SAR habitat conserved under the program, and tracking the SAR-related restrictions associated with the easements or purchased properties, are important next steps for understanding the program's contribution to SAR recovery. Similar to easements and the EGP, obtaining disaggregated data on the value of the donated and purchased properties (or interests in the property, e.g. easements) is also important for assessing the program's overall cost-effectiveness for SAR conservation.

## BARRIERS TO ECONOMIC INSTRUMENTS ON PRIVATE LAND

Budget 2018 made a historic investment in nature conservation (including species at risk), which will have important ramifications for SAR management on private land. And although economic instruments have a real potential to cost-effectively improve conservation outcomes, governments, ENGOs and landowners face several important barriers which prevent their full adoption and scale-up. This section discusses a few key barriers drawing on evidence from Canada, the United States and Australia.

First, setting up targeted payment programs can impose significant transaction and monitoring costs for ENGOs.<sup>59</sup> In the case of Canadian conservation easements, these have ranged from several thousand dollars to tens of thousands of dollars per project.<sup>60</sup> However, well designed conservation programs can secure benefits which easily outweigh these transaction costs. The real issue lies in designing policies and programs which strike the right balance – implementing targeting or screening measures to ensure good value for money, while also ensuring that transaction costs are manageable for conservation organizations and do not discourage landowner participation in the program.<sup>61</sup>

While monitoring costs can pose a challenge for some ENGOs, solutions do exist. Some land trusts have created specific endowment funds to help deal with these monitoring costs.<sup>62</sup> Federal, provincial and territorial governments could also consider providing ENGOs and land trusts with financial support for monitoring costs incurred by projects that meet certain baseline levels of environmental quality (including SAR habitat).

Second, while providing payments to landowners may be a necessary condition for engaging them in SAR conservation, it is not always sufficient. Landowner perceptions of stewardship programs can also critically influence participation rates. For instance, landowners may be distrustful of conservation programs implemented by governments due to concerns that it will limit their autonomy or their property rights<sup>63</sup>. Other landowners may willing to participate in principle, but remain reluctant

### Box 4: Species at Risk in Budget 2018

The 2018 federal budget announced several major investments in nature protection, with over \$1.3 billion allocated to species at risk conservation and other activities over five years. Of this, \$500 million will be used to initiate a \$1 billion Nature Fund, in partnership with industry, environmental non-governmental organizations, provincial and territorial governments, and others.

An additional \$167.4 million over five years has been committed to better protect, preserve and recover endangered whale species in Canada.

**Landowner perceptions of stewardship programs can also critically influence participation rates.**

## Providing regulatory assurances and allowing for flexible conservation measures and can help shore up participation in stewardship schemes.

due to concerns that voluntary measures to enhance SAR populations on their property will render them liable to future land use regulations (such as requiring them to maintain the population enhancement measures indefinitely).<sup>64</sup>

In other cases, landowners want to maintain a sense of ownership in conservation initiatives and may resent ‘top-down’ approaches being imposed by policymakers. Landowners also generally prefer flexible conservation measures rather than permanent ones, as we saw in the discussion of conservation easements.<sup>65</sup> At the same time, making a program too flexible or giving landowners complete autonomy over program design is unrealistic, and could compromise the cost-effectiveness of the program.<sup>66</sup>

Cultivating a sense of trust among landowners through active discussion and outreach – ideally spearheaded by ENGOs with a strong local presence – can go a long way towards making landowners receptive to stewardship measures such as economic instruments.<sup>67</sup> Providing a ‘no surprises’ clause for participants in SAR stewardship programs, which would allow landowners to return their property to a baseline state once the program or agreement has expired, would also be very helpful for alleviating landowner concerns.<sup>68</sup> Finally, providing landowners with some control over program design might also help shore up participation, even if cost-effectiveness or policy targeting might be somewhat compromised as a result.

Another common concern among policymakers and environmental advocates is that increasing the use of payment schemes for stewardship runs the risk of ‘crowding out’ intrinsic motivations for conservation.\* This can potentially lead to less conservation than expected (since the payments might displace pre-existing voluntary stewardship measures rather than build on them), or could lead to a reversal of conservation gains if and when payments are phased out (since landowners may no longer be motivated to engage in conservation activities).

The crowding out effect of financial incentives is supported by both field evidence and experimental studies,<sup>69</sup> but it is important not to overstate the issue’s significance. Motivational crowding out is only a genuine risk if landowners are intrinsically motivated to engage in SAR conservation to begin with – but this unlikely to be the case when SAR (or their residences or CH) are seen as a nuisance to crop production or livestock, or if SAR conservation actions are costly to landowners,<sup>70</sup> which are precisely the sorts of cases where incentive payments are most likely to be effective. There is also some evidence which suggests that traditional regulations and government-protected land might also crowd out voluntary conservation actions,<sup>71</sup> suggesting that crowding out effects may not be unique to economic instruments or incentive payments.

The upshot is that policymakers need to identify those cases where payments will improve conservation outcomes (even if some crowding out occurs), as well as cases where unpaid voluntary conservation actions (drawing on intrinsic motivations) will be most effective. A recent survey of Australian stakeholders involved in implementing reverse auction programs for biodiversity protection found that respondents generally believed that financial compensation improves the cost-effectiveness of reverse auctions, since they believed that payments only had a modest crowding out effect.<sup>72</sup> Moreover, the risk of motivational crowding out can be minimized by appropriately structuring the incentive payments<sup>73</sup>. Crowding out can also be diminished by targeting groups of landowners with very low rates of voluntary participation in conservation activities, or with very low stated interest in conservation<sup>74</sup>.

\* Motivational “crowding out” occurs when the use of extrinsic incentives (such as monetary payments) for conservation leads to the displacement of those intrinsic motivations which initially drove participants to engage in voluntary (unpaid) conservation activities.

# IMPLICATIONS FOR POLICYMAKERS AND FUTURE RESEARCH AREAS

The challenges facing species at risk recovery are daunting, and they will not be met without concerted efforts to engage landowners in SAR conservation. Economic instruments have significant potential to incentivize SAR conservation at scale by compensating landowners for their conservation efforts. If appropriately designed and targeted, they also have the potential to bring about significant cost savings.

We have seen that several programs are using innovative approaches to increase cost-effectiveness or incentivize participation in stewardship – from revolving land conservation programs, reverse auctions for land conservation and restoration, direct payments for stewardship, and temporary easements. These are powerful examples to refine and build upon.

But economic instruments do not operate in a vacuum – they need to be attuned to the local context and to the preferences and concerns of landowners. Cultivating trust with landowners through active engagement and outreach is necessary. It also implies the need for a more experimental – and possibly collaborative – approach to policy design and implementation.

While we are still learning which approaches and tools work best in which contexts, the evidence reviewed nonetheless provides some general lessons for policymakers. These include:

- Economic instruments should be used more extensively for species at risk conservation, due to the emerging evidence on their effectiveness in securing conservation benefits, and stakeholders' perception that they would enjoy high levels of public support.
- Economic instruments will likely be needed to incentivize SAR conservation actions with high public net benefits but negative private net benefits (e.g. more costly or labour-intensive activities). These might include measures such as conservation easements, ecological restoration, reducing agricultural intensification or taking land out of production.
- SAR conservation programs – including those using economic instruments – should be explicitly designed and implemented as field experiments, or quasi-experiments, in order to refine our understanding of which tools and program designs are most likely to be cost-effective.
- Although some simplifications may be necessary to manage the transaction costs associated with data collection and monitoring, the benefits generated by policy targeting – such as identifying the ecological or habitat attributes needed for recovering SAR on private land (e.g. through habitat suitability models), the landowners whose properties satisfy (or are likely to satisfy) these attributes, as well as a baseline rate of threats to SAR – are likely to amply repay the additional transaction costs incurred.<sup>75</sup>

**SAR conservation programs should be explicitly designed and implemented as field experiments, or quasi-experiments, to refine our understanding of which tools and program designs are most likely to be cost-effective.**



**Western chorus frog**, great lakes / St. Lawrence - Canadian Shield population (*Pseudacris triseriata*) is listed as threatened under the Species at Risk Act. Its range in Canada spans southern Ontario and southwestern Quebec.

Source: Species at Risk registry.

- This being said, some trade-offs may be necessary to ensure a critical mass of participation in payment schemes – either by ensuring that the schemes are simple enough for landowners to understand and enroll in them, by introducing some flexibility measures into the schemes, or possibly by providing landowners with opportunities to co-design the conservation program.<sup>76</sup>
- Investing in outreach and dialogue with landowners is necessary for shoring up interest in and support for payment programs. Regulatory assurances (such as a ‘no surprises’ clause) may also be necessary.

The issues raised in this brief also outline some important questions for further research. Specifically, more evaluative research – ideally, in the form of field experiments with controls – is needed to assess the effectiveness of economic instruments for SAR conservation across various domains of application (e.g. for incentivizing various threat remediation and recovery actions, or for conserving various taxa).

Further research is also needed to analyze trade-offs and interactions between different policy instruments. Only a handful of studies have examined how formally protected areas (or land use regulations) interact with economic instruments,<sup>77</sup> and even fewer studies have examined the effects of combining two or more economic instruments for SAR protection. Much more research from various disciplinary perspectives is needed to provide a fuller understanding of interactions and trade-offs among different policy instruments in terms of biological effectiveness, total policy costs (including transaction costs), and social acceptability.<sup>78</sup>

Finally, improving our understanding of the economic impacts of different economic instruments for SAR conservation on private land is also important. Most integrated ecological-economic studies have examined the economic impacts of SAR recovery measures on a select few industries, namely forestry, oil and gas, and, to a lesser extent, agriculture. Well-designed studies estimating economic impacts (with appropriate counterfactuals) on other sectors operating on private land, such as recreation and construction, along with additional studies of the agricultural sector, would be extremely helpful for informing decision making. The recreation and construction sectors are a particularly glaring gap, since they have been identified as two of the primary threats to SAR in finalized recovery strategies.<sup>79</sup>

While there will be no “silver bullet” to recovering SAR, appropriately targeted incentives to landowners, as well as dedicated outreach and support, can make a substantial contribution to stabilizing and recovering SAR populations. Budget 2018 has provided conservationists with a golden opportunity to advance species at risk protection on private (and public) land - it behooves us all to make sure that it is done right.

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- 75 Although it is difficult to find field experiments which quantify transaction costs (along with all other policy costs) and identify the appropriate counterfactuals, the benefits from policy targeting are supported by both the theoretical/conceptual literature as well as case study evidence. For general discussion, see Newburn *et al.*, *op. cit.*; Pannell, Roberts, Park, and Alexander (2013), *op. cit.* For case study evidence on the benefits of targeting, see Hill *et al.*, *op. cit.*; Copeland *et al.*, *op. cit.*; Boxall, P., Perger, O., and Weber, M. (2013) *Reverse Auctions for Agri-Environmental Improvements: Bid-Selection Rules and Pricing for Beneficial Management Practice Adoption*, *Canadian Public Policy*, 39 (Special Supplement on Environmental Policy in Canada (August/août 2013)), S23-S36; Palm-Forster, Swinton, Lupi, and Shupp, *op. cit.*
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