

Conservation on Private Lands: Mountain Plover as a Model for Land Stewardship

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Bird Conservancy Scope

- 13 states including 7 Fish/Wildlife Agencies
- 8 states in Mexico
- 8 Bird Conservation Regions
- 4 Forest Service Regions





Science

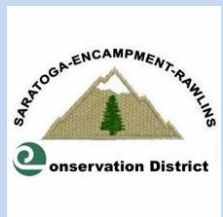
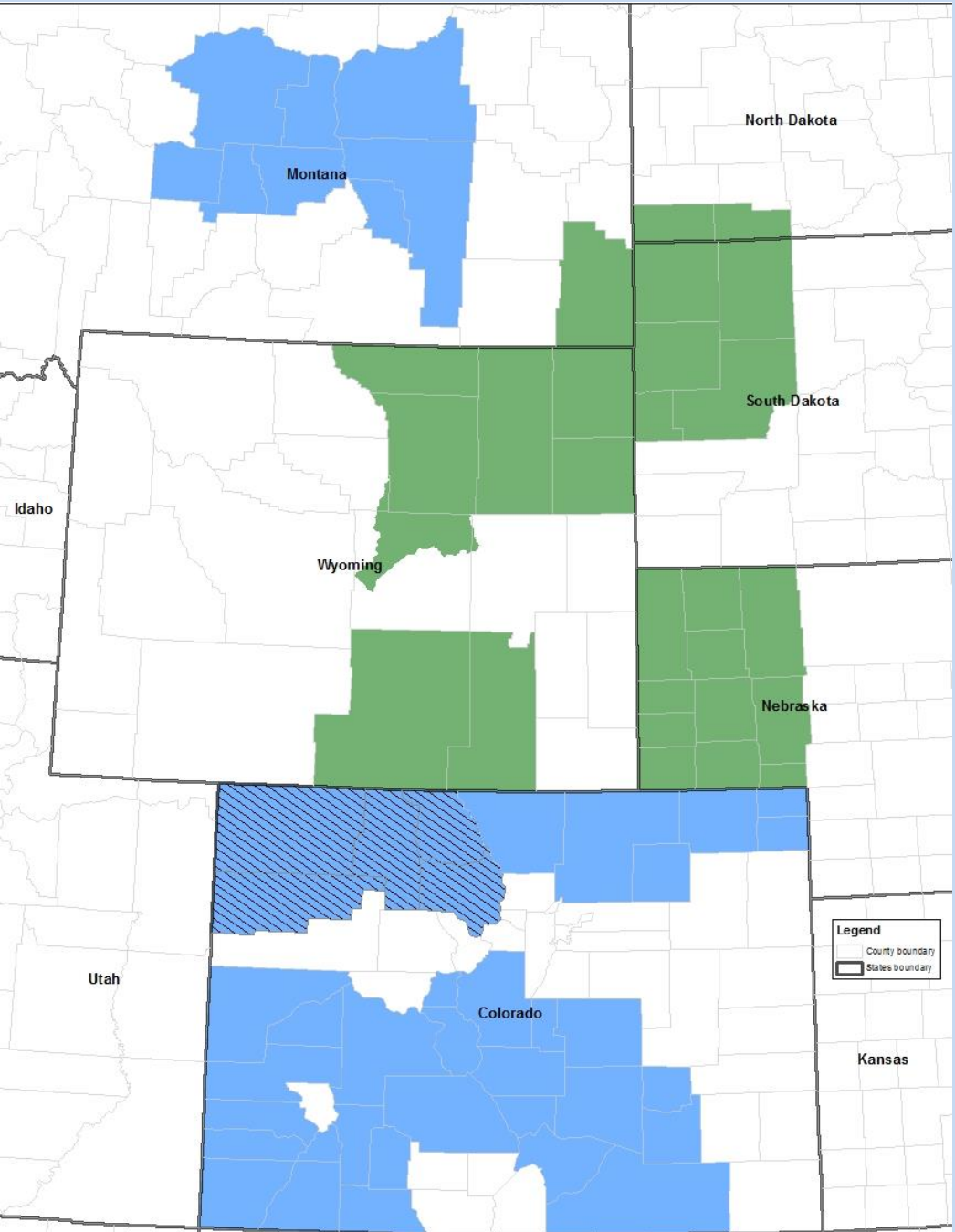


Education



Stewardship

On-the-ground delivery



Stewardship Program

- Science-based, partnership driven efforts that focus on a two-way transfer of knowledge (landowner ↔ conservation professional)
- Identify win-win solutions for wildlife and landowners through voluntary conservation actions
- Mountain Plover nest conservation is a model for land stewardship



Conservation starts with a conversation...

Outreach

(workshops & landowner visits)



Simple conservation efforts
(stock tank ladders, increased awareness)



Ecological Value



Economical Value

“Contagious Conservation”



Power of Partnerships



Background: Mountain Plover

- Nebraska
 - ~5% of pop. (12,500 in U.S)
 - State-threatened
- Colorado
 - ~80% of pop.
 - Species of Concern

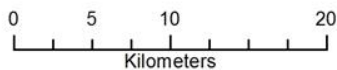
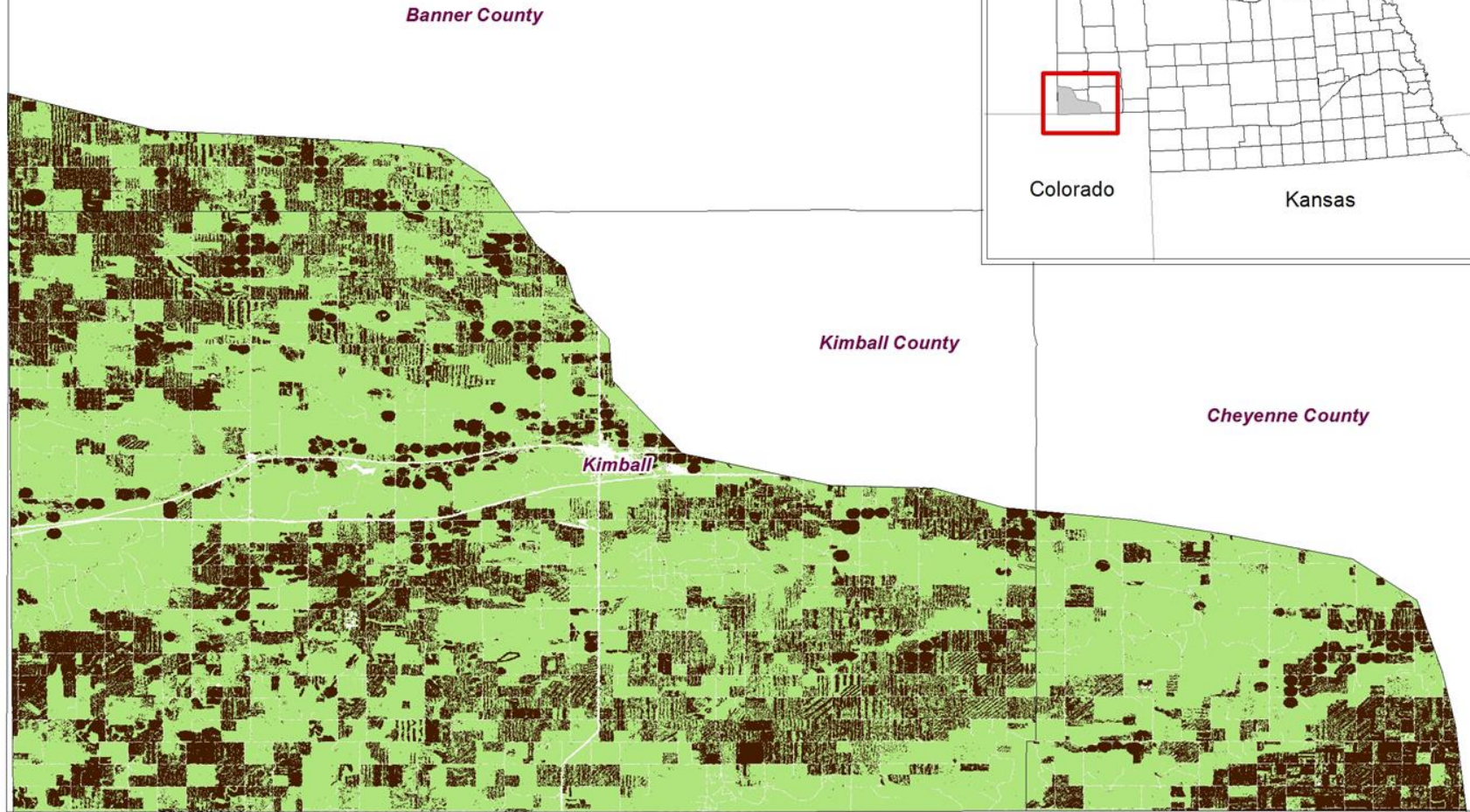


Breeding Ecology

- Two nests per pair in scraping on bare ground
- Incubate in heat of day and at night
- Forage on insects (beetles/grasshoppers dominant)
- 95% on private lands
- Prairie dog towns historically, burns, croplands



Landuse within Mountain Plover Breeding Range in southwestern Nebraska



Coordinate System: NAD83 UTM zone 13N
 Projection: Transverse Mercator
 Datum: North American 1983
 false easting: 500,000.0000
 false northing: 0.0000
 central meridian: -105.0000
 scale factor: 0.9996
 latitude of origin: 0.0000
 Units: Meter



Background: Breeding Habitat

- **Accidental tillage** is driving factor for nest loss on croplands
- Other factors are negligible in NE
 - Predation usually around 15%
 - Weather (heat, flooding, hail) ~5-7%
 - Abandonment low (<5%)



Background: Private Landowners

- Landowner Incentive Program (USFWS: 2006-2012)
- 2006-2009: \$100/nest protected if found by BCR
 - Nests reach natural fate
- 2010-present: added \$200/nest protected if found by landowner
- Payments currently funded by other sources



Seth Gallagher



Larry Snyder

Year	Nests	% Success	% Found by Landowner	Landowners	Acres
2004	20	N/A	N/A	16	12,000
2005	49	78	12	19	25,570
2006 (\$)	86	80	15	63	89,000
2007 (\$)	111	82	2	68	123,900
2008 (\$)	69	88	20	58	96,000
2009 (\$)	80	N/A	20	61	97,000
2010 (\$\$)	103	70	17	72	103,000
2011 (\$\$)	65	57	34	76	142,720
2012 (\$\$)	66	67	42	78	210,260
2013 (\$\$)	65	72	9	79	211,220
2014 (\$\$)	58	67	22	80	>200,000
2015 (\$\$)	48	65	16	80	>200,000

Background: Nest-Marking



Background: Nest-Marking

Marker

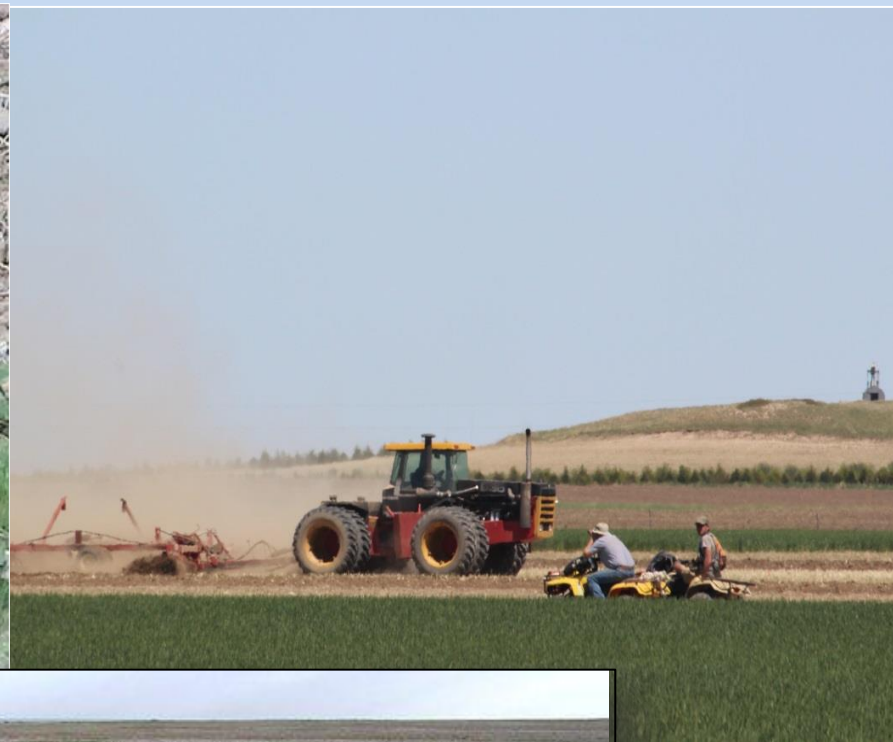
Nest



Background: Nest-Marking



Bart Bly

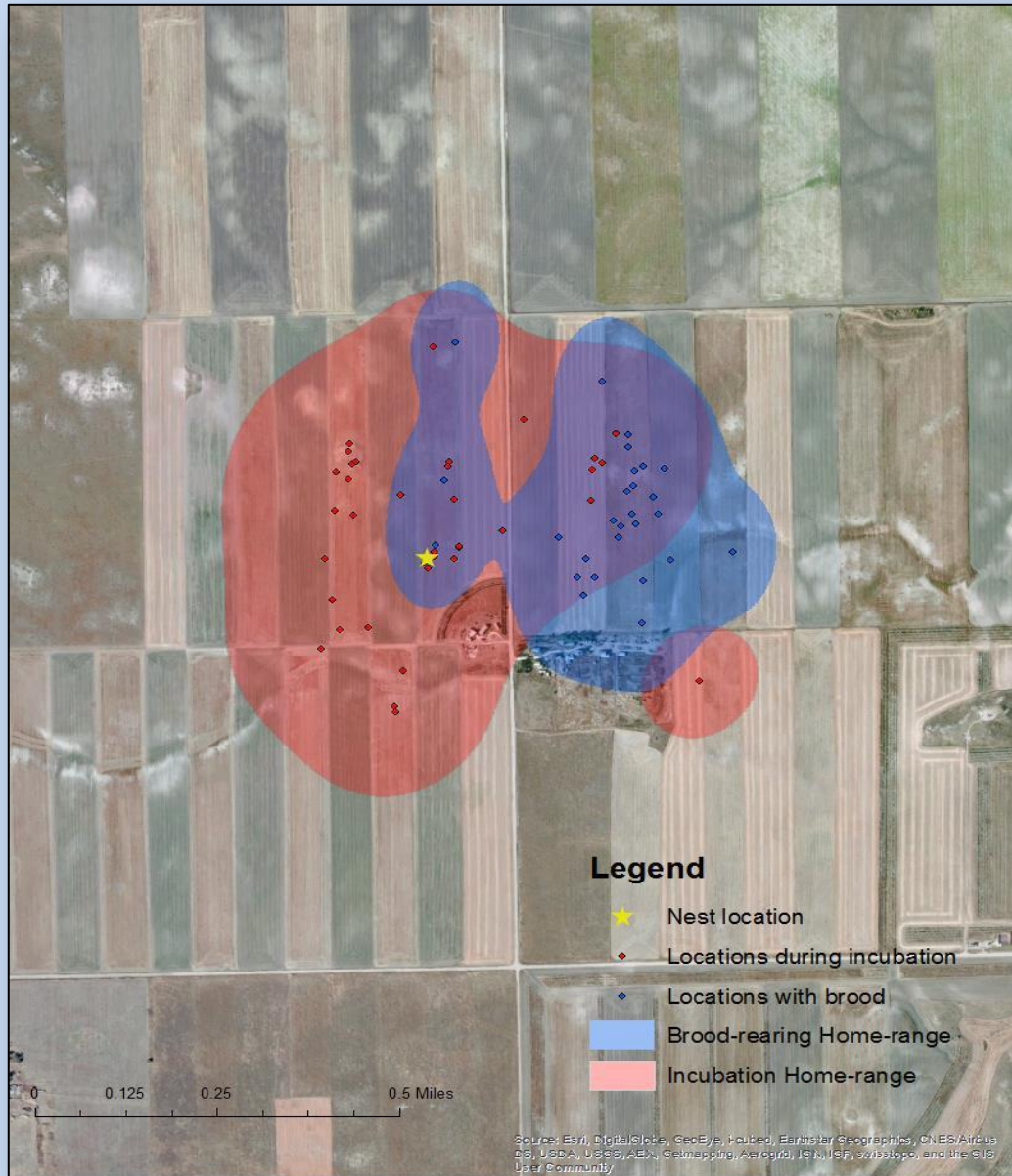


Is nest-marking sustainable?

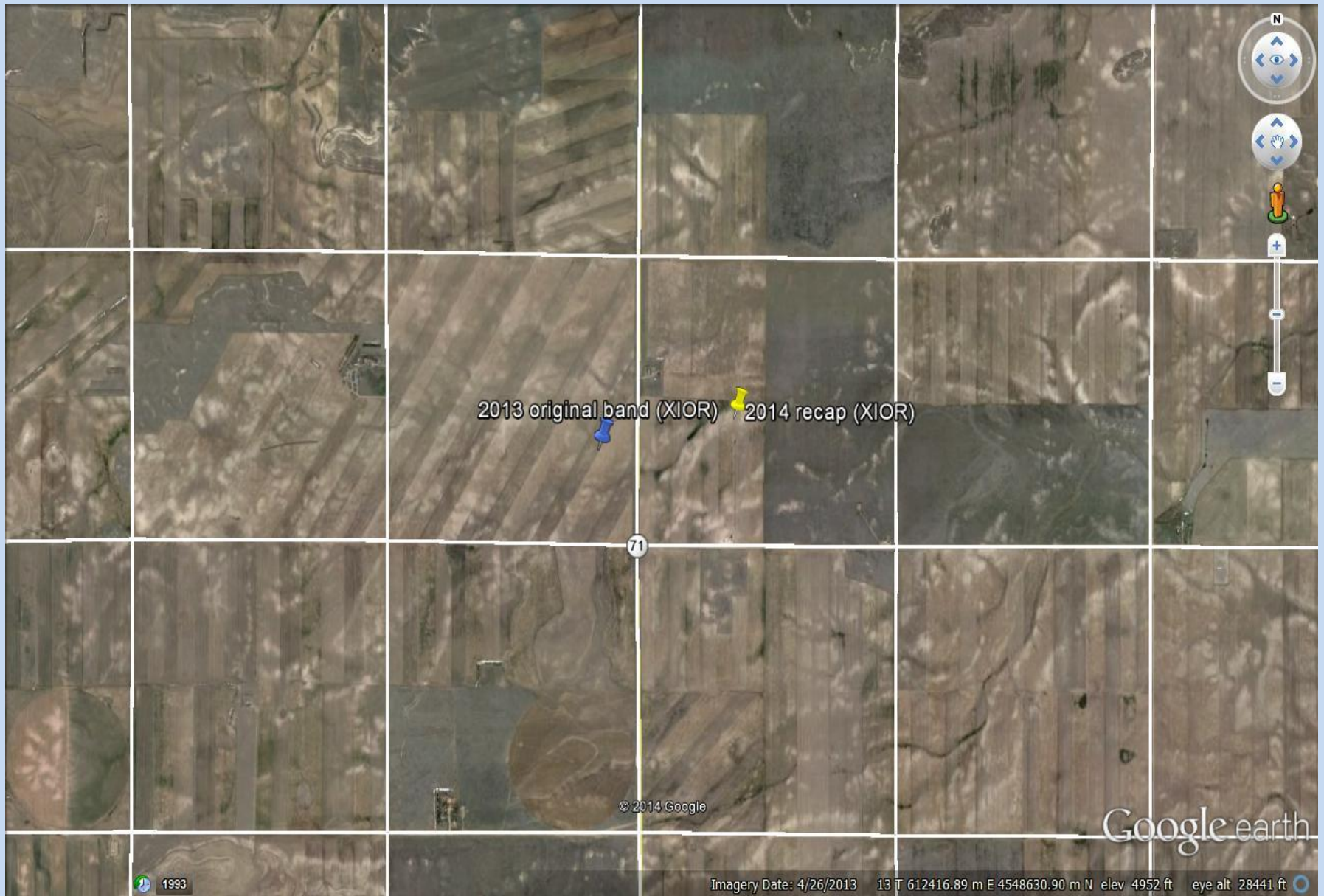
- Nest survival for cropland nests
 - Compared marked nests to unmarked dummy nests 2005-2007
 - 87% marked nests survived 34% unmarked nests hatched
- Chick survival: 52% croplands
 - 23% on CO croplands



Research



Research



Incentives for Conservation

- 72% land private in U.S.
 - 27% of studies on private land
- Landowner Incentive Program ended
- Will landowners allow nest-marking?
- Why are they motivated to participate?

Using financial incentives to motivate conservation of an at-risk species on private lands

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SUMMARY

Financial incentives have become a core component of private lands conservation programmes because of their ability to motivate stewardship behaviour. Concern exists about the durability of stewardship behaviours after payments end. Payments for performance may impact farmers' current and future engagement with an incentive programme to protect an at-risk ground-nesting grassland bird. Farmer motivations for participating in the programme, as well as their intention to continue the programme if the financial incentive no longer existed, were quantified. Although farmers did not report a high level of current involvement in the programme, most reported they would continue at a similar or higher level of engagement if the payments ended. These outcomes were related to their perception that their participation was driven by their internal motivation to help rather than the desire to obtain the financial reward. The perception that their behaviour was self-directed was positively influenced by the flexibility surrounding landowners' engagement with the programme, a feeling of competence and achievement, and a feeling of connectedness to the organization implementing the programme. The success of conservation incentive programmes over the long term can be enhanced by explicitly accounting for the needs of landowners in programme design and administration.

Keywords: at-risk species, direct payments, endangered species act, governance, incentives, intrinsic motivation, multifunctional landscapes, private lands, self-directed motivation, stewardship, voluntary conservation agreements

INTRODUCTION

Farms, ranches, and timberlands are increasingly recognized for their integral role in producing ecosystem services important to society (Daily *et al.* 2001), and the diversity

of species found on these lands plays a crucial role in the production of these services (Zavaleta *et al.* 2010; Maestre *et al.* 2012). Biodiversity is currently undersupplied by private landowners in the USA, largely because the prohibitive mandate of the Endangered Species Act of 1973 (ESA) to protect endangered species over other land uses, combined with a strong private property rights orientation in the USA, has led landowners to prioritize concerns about property and livelihoods over participation in species or habitat recovery actions (see for example Norris 2004). This is important, as 72% of land in the USA is privately owned (Sanford 2006). More recently, prelisting programmes have begun to emerge that focus on conserving declining species before the restrictions of the ESA are triggered (Donlan *et al.* 2013). These programmes foster early action that may lead to reduced costs of species recovery, restore or protect wildlife habitat on multifunctional private lands, and ideally, prevent species from being added to the endangered species list.

Financial incentives have become a core component of most conservation programmes because they can be highly effective in motivating stewardship behaviour (Derissen & Martin 2013). Paying landowners to engage in species recovery efforts aligns the interests of the landowner (such as income from land use) and society (for example increased biodiversity and improved ecosystem function). Although incentives can motivate and reward conservation activities on private lands, their use further positions conservation as a voluntary pursuit that necessitates compensation, instead of a responsibility inherent to land ownership. As such, there is potential that direct payments to landowners may fundamentally undermine a landowner's stewardship ethos and internal motivation to engage in biodiversity conservation (Muradian *et al.* 2010; Sorice & Donlan 2015).

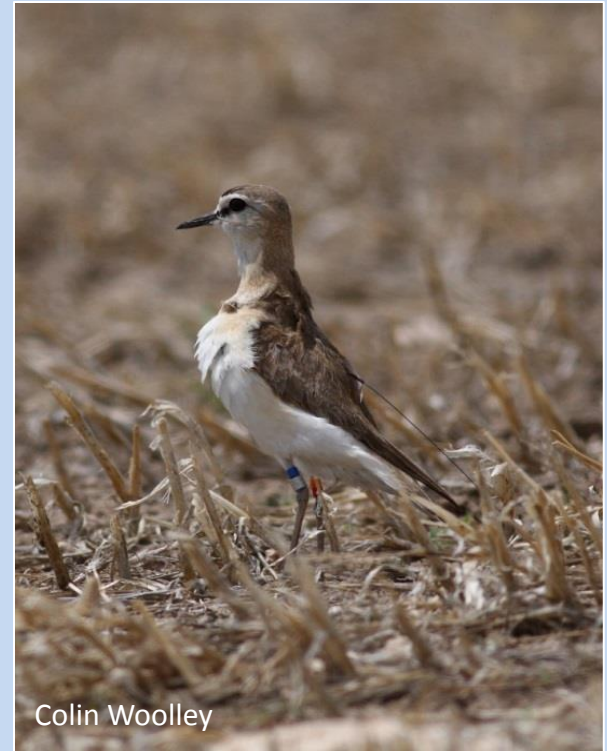
Although payments are effective behaviour-change agents in the short term, there may be unintended consequences associated with their use (Muradian *et al.* 2013). Of primary concern is the failure of direct payments to ensure that individuals sustain the conservation behaviour after a financial incentive is removed because compensation can erode an individual's motivation to conserve over the long term. This hidden cost has been identified in the psychological and behavioural economics literature (Dwyer *et al.* 1993; Heyman & Ariely 2004; Bowles 2008), and questioned on moral grounds (Sandel 2012). Concerns about hidden costs of environmental conservation programmes also have

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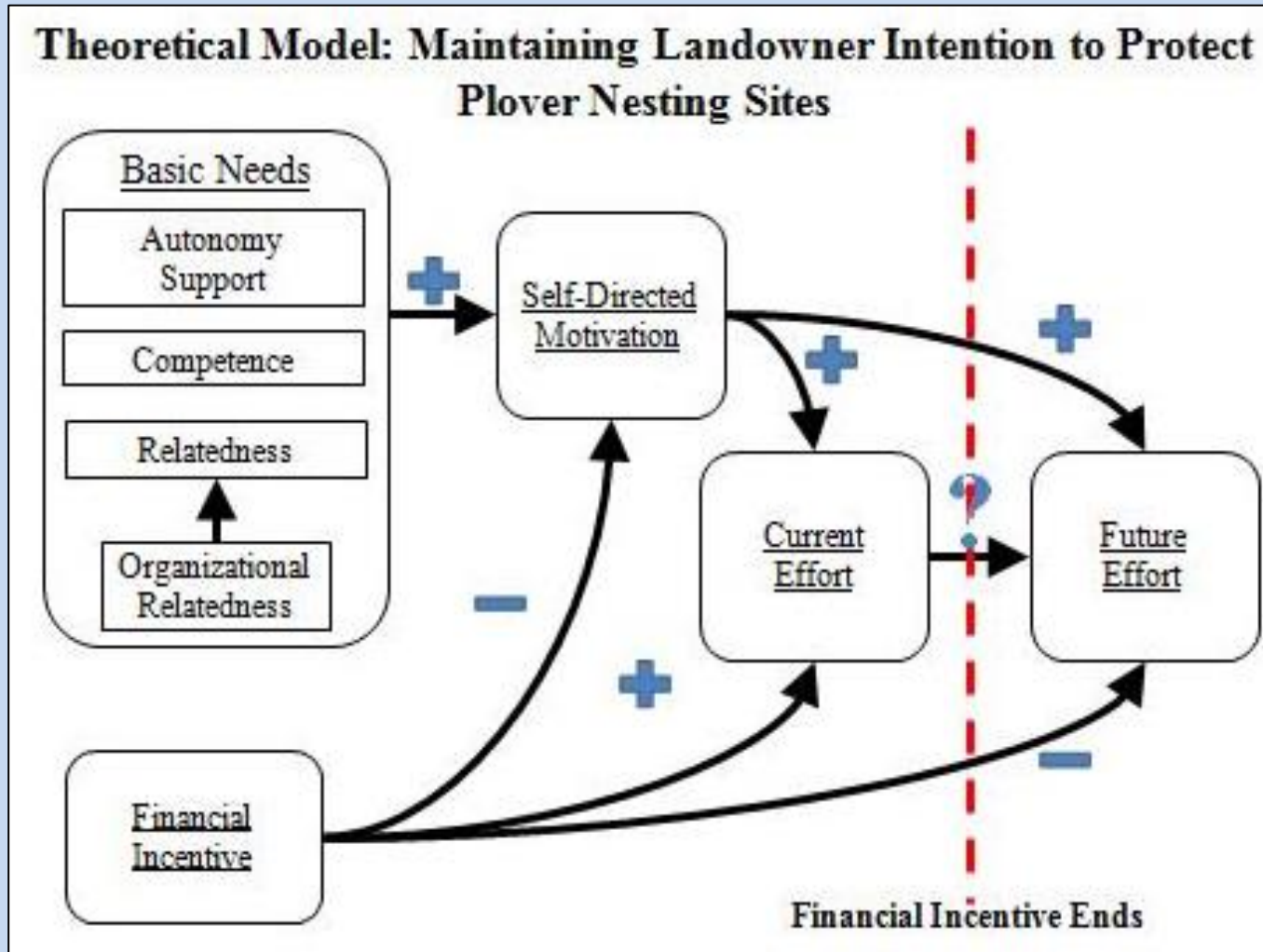
Supplementary material can be found online at <http://dx.doi.org/10.1017/S0376892915000302>

Background: Self-Determination Theory

- **Intrinsic:** complete an activity due to its alignment with values or interests
- **Extrinsic:** complete an activity to attain a separable outcome, earning praise or avoiding criticism
- Landowners in NE receive monetary incentive
 - Examine their **intrinsic** potential

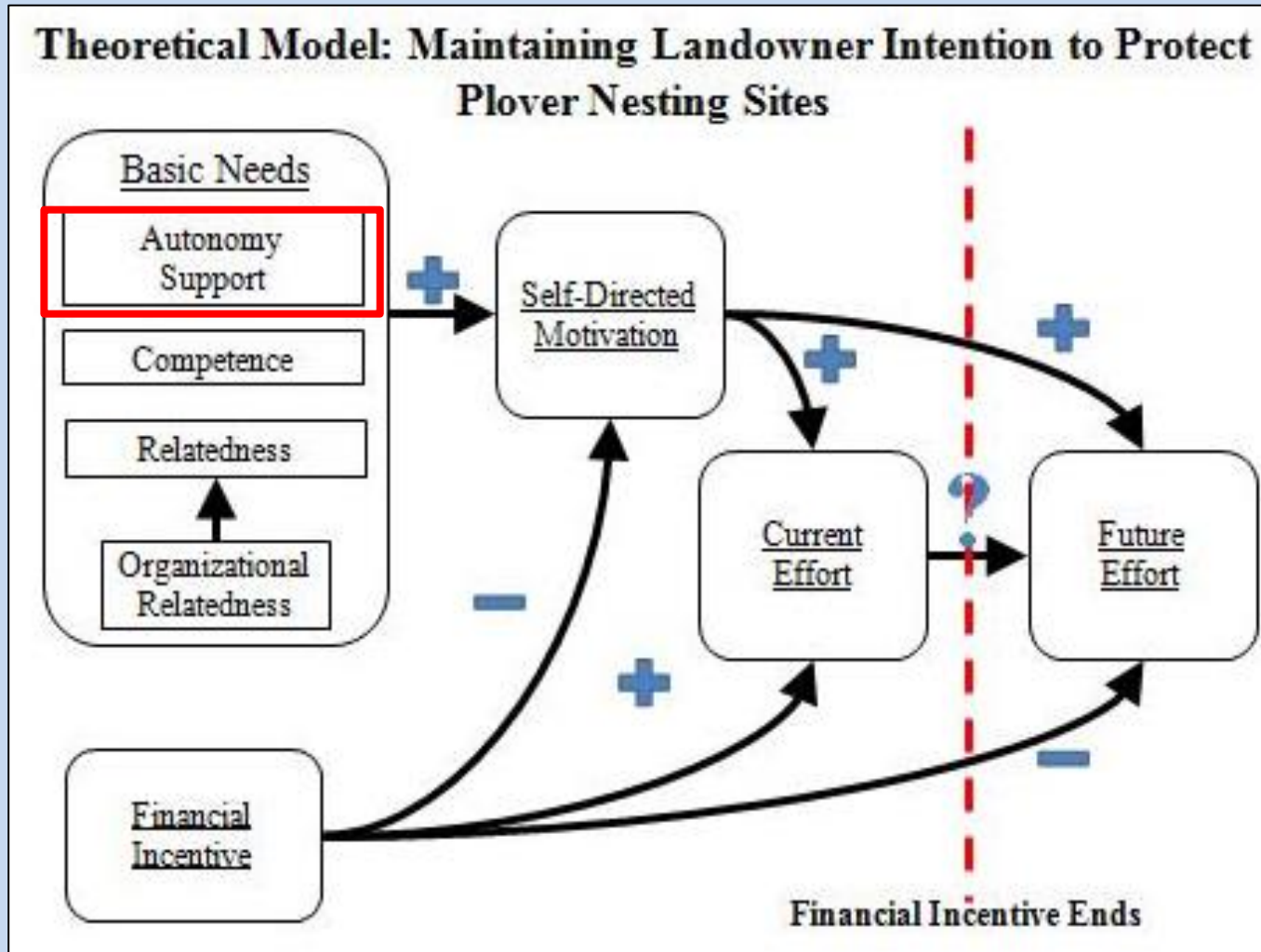


Background: Self-Determination Theory



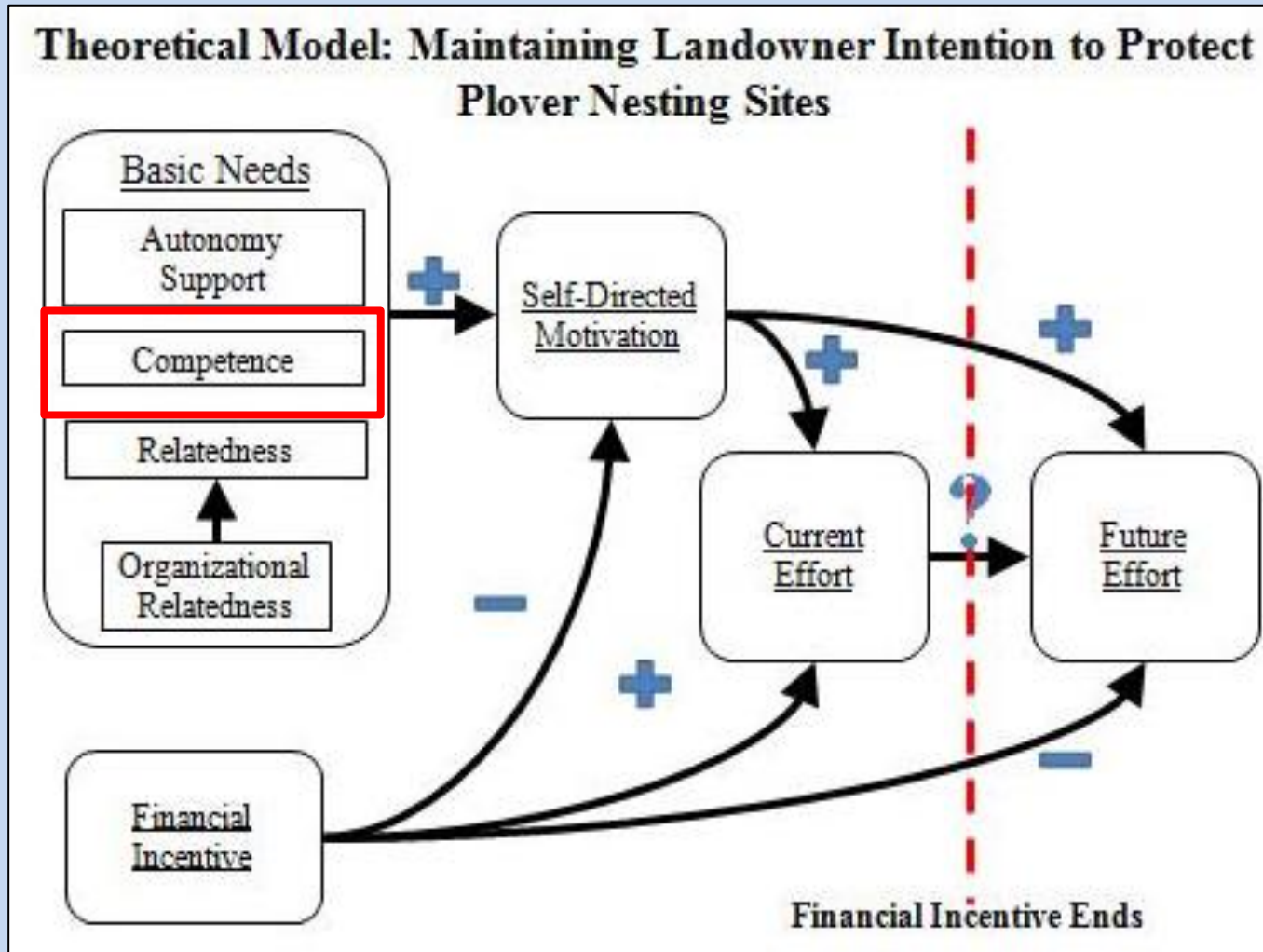
Self-Determination Theory. Conceptual model based on Ryan and Deci (2000), promotes intrinsic motivation. + = Positively support next variable, - = Harm next variable

Background: Self-Determination Theory



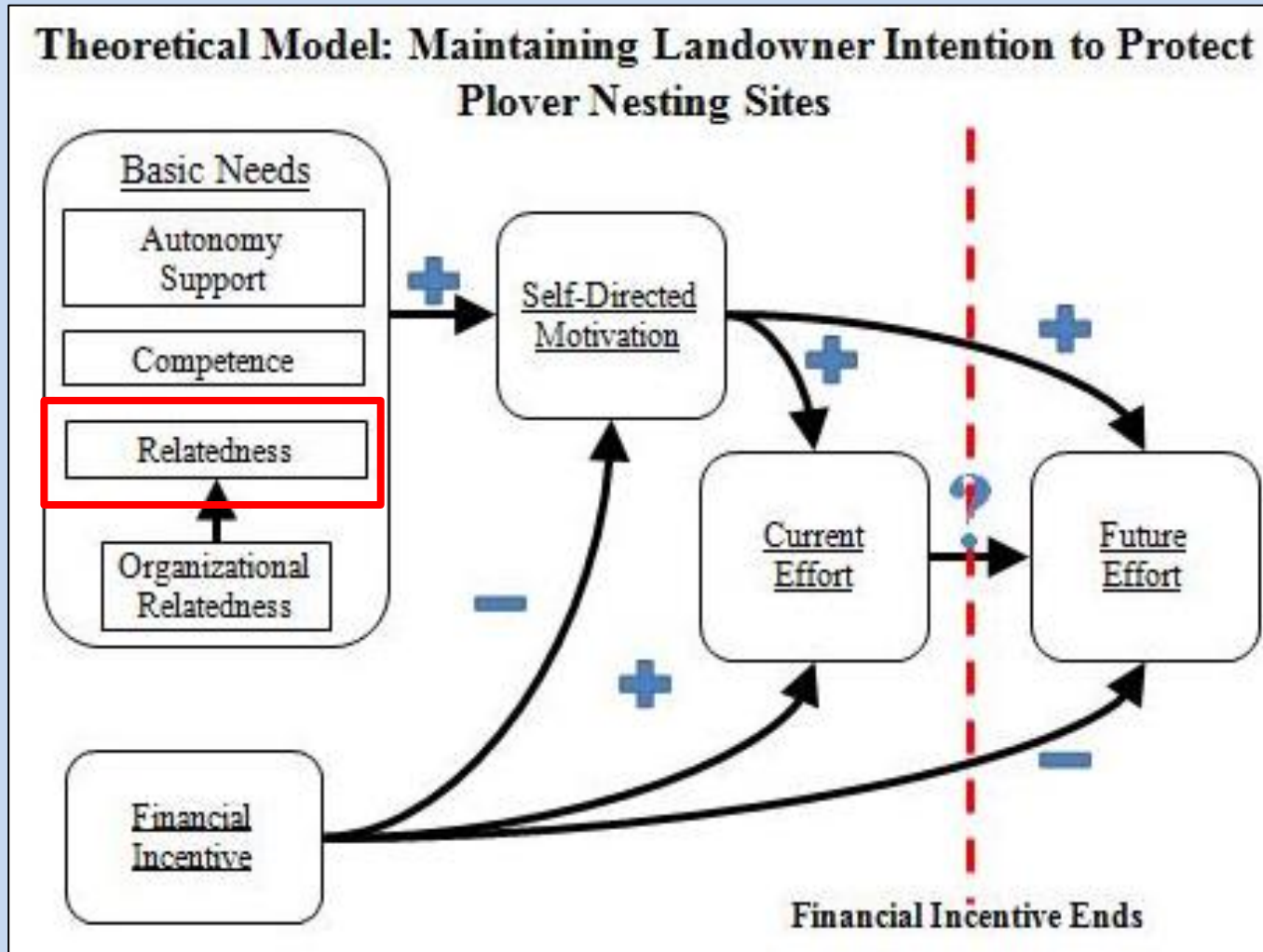
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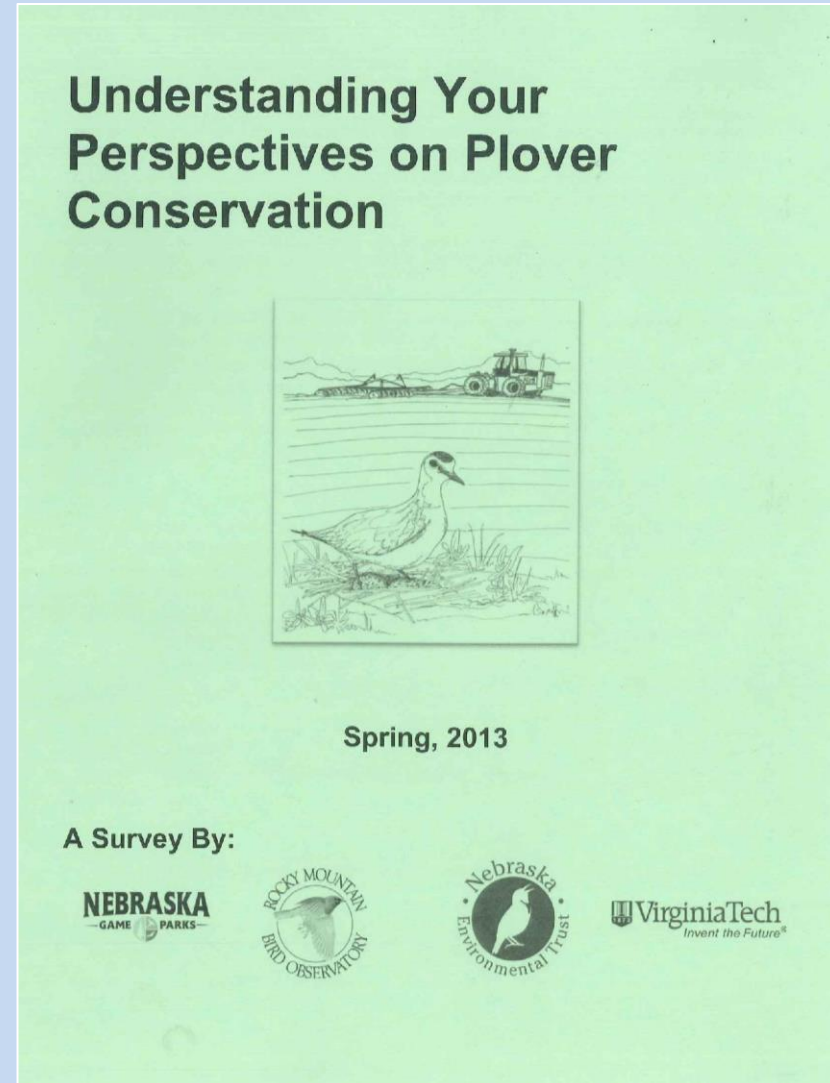


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Methods: Survey Design

VA Tech and RMBO staff developed survey topics: (March-July 2013)

1. Demographics
2. Mountain Plover Participation
3. SDT
 1. Autonomy, Competence, Relatedness
 2. Organizational Affinity (RMBO)
4. Motivation for Participation
5. Evaluation of Financial Incentive
6. Current Effort
7. Indication of Future Effort



Landowner Outreach Biologist

- Direct liaison to community
- 3rd generation farmer
- Resident of Kimball, NE
- RMBO staff since 2004
- Recruited landowners to protect plovers for 10 years



Results

- 77 surveys distributed
- 41 returned, 2 indicated they were not in the program at the time of the survey
- 4 declined to participate
- **55%** response rate
 - 94% male, ~60 years old
 - 83% grew up on farm



Results

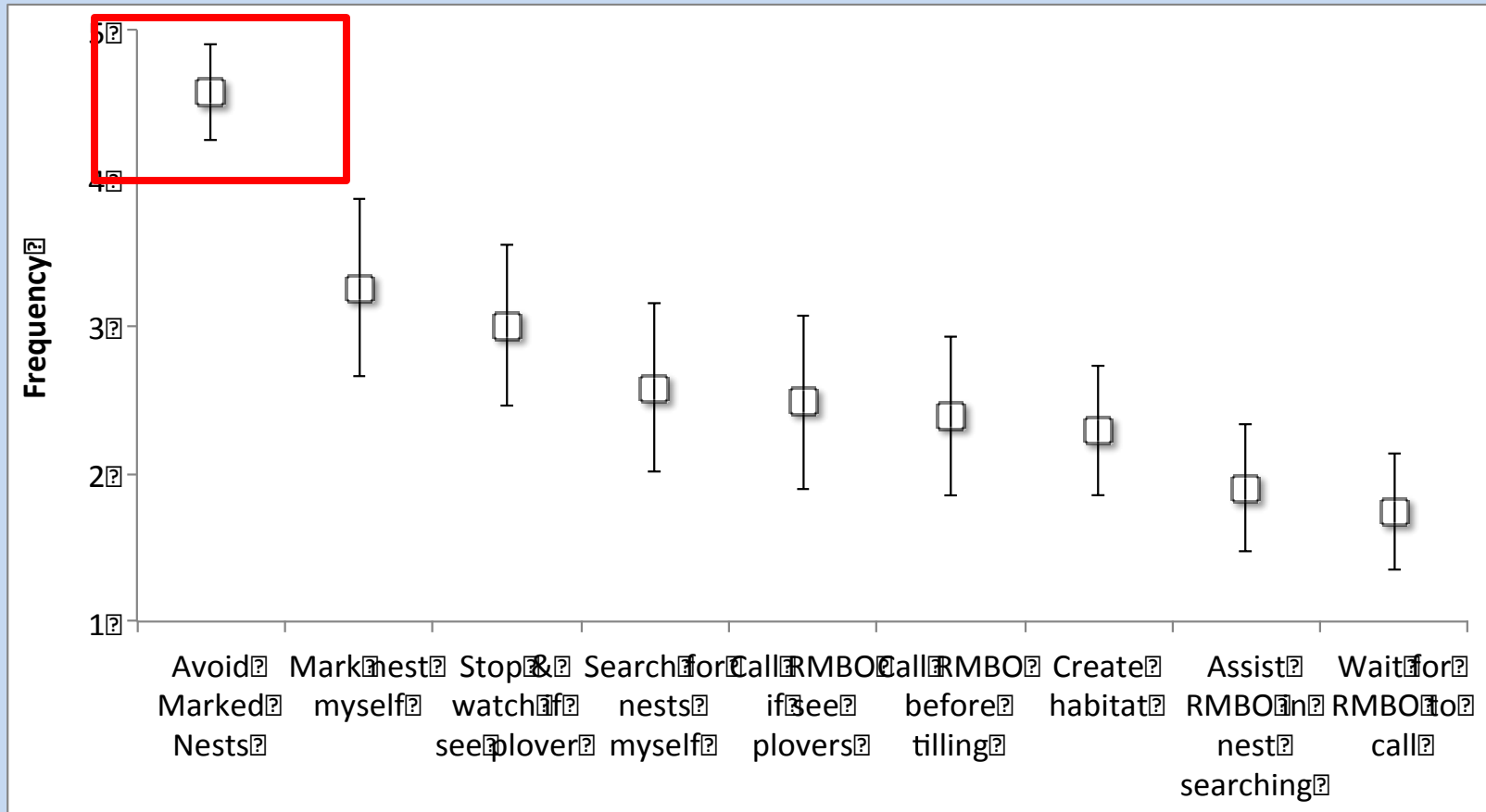


Colin Woolley

Nest-marking Program

- 89% learned through RMBO
- 71% strong influence due to RMBO interaction
- 81% also participate in one other incentive program (e.g. CRP)
- 65% (n=17) indicated a low level of current effort
- 71% (n=22) would continue to participate without financial incentive at a lower level

Results: Mountain Plover Participation



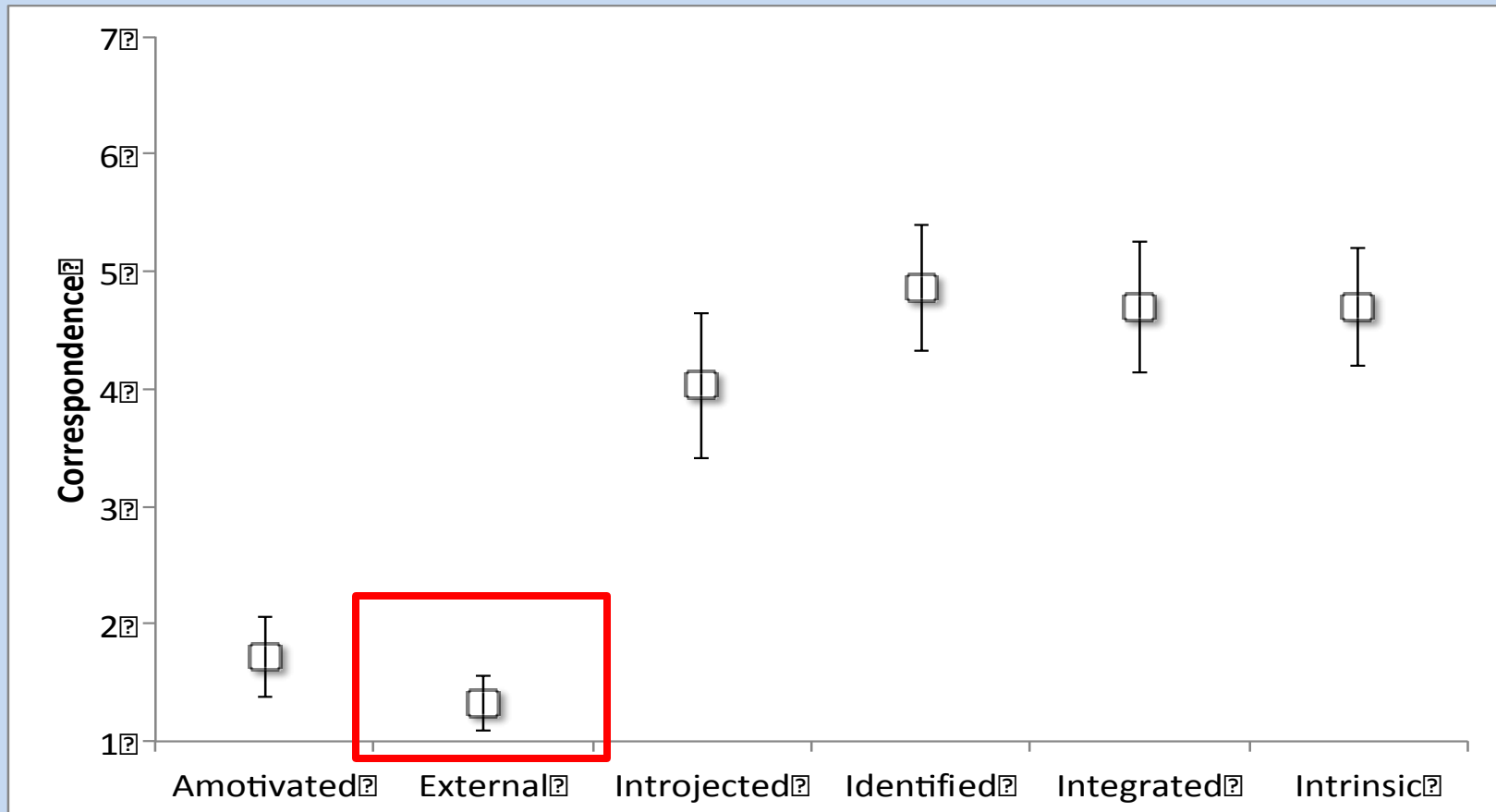
Means and jackknifed 95% confidence intervals showing engagement different aspects of the plover program. 1 = Almost never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Almost always.

Results: Self-Determination Theory



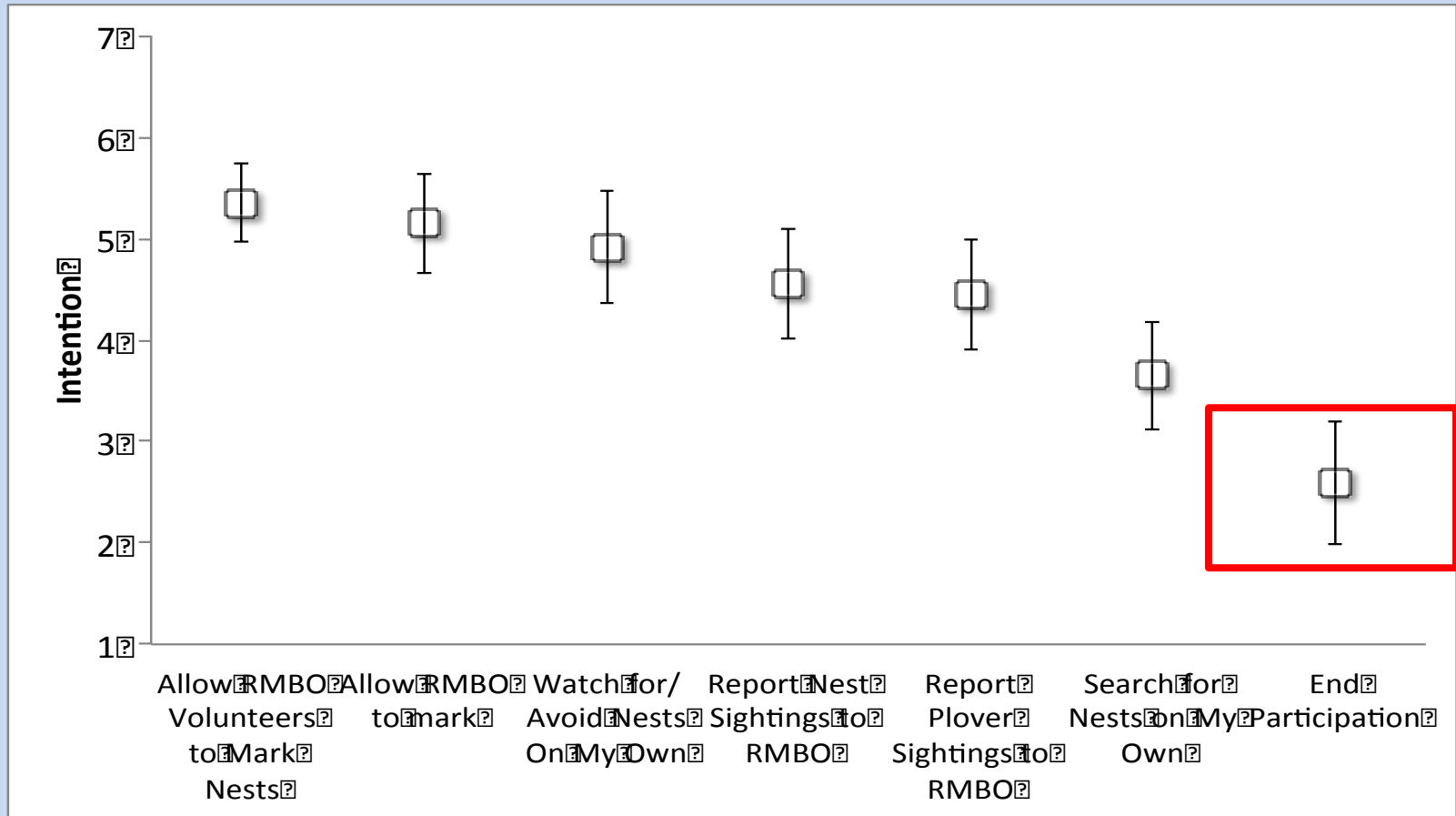
Means and jackknifed 95% confidence intervals for basic needs related to program participation. 1= Not true at all, 4 = Somewhat true, 7 = Very true.

Results: Motivation for Participation



Means and jackknifed 95% confidence intervals for basic needs related to program participation. 1= Not true at all, 4 = Somewhat true, 7 = Very true.

Results: Future Effort



Means and jackknifed 95% confidence intervals for intention to continue in the plover program if the financial incentive was removed. 1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Slightly unlikely, 4 = Unsure, 5 = Slightly likely, 6 = Moderately likely, 7 = Extremely likely.

Discussion

- SDT needs are met
- Many landowners will continue to participate
- Current level of effort indicator of future effort
- Social Desirability bias
 - Tell us what we want to hear
- 45% didn't respond
- Timing was not great: Growing season
- Landowner Outreach Biologist plays vital role in partnership



Management Implications

- Nest-marking in Nebraska
- Landowner outreach vital on croplands, avoid a “reproductive sink”
- Does Incentivizing Conservation lead to long-term benefits?
- Other incentive options?
- Examine farmers that don’t participate, and the 45% non-respondents



Angela Dwyer



Angela Dwyer

Outreach and Opportunities

- Karval Mountain Plover Festival: 10 years in Karval NE, hosted by community end of April
- Kimball Mountain Plover festival
- Grassland bird tours in Kimball, NE, (April-May)
- Citizen Science, Naturalist and Volunteer
- Bird Banding Stations
 - (Chatfield, Chico Basin, NE)
- Summer camps





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