

ENDANGERED SPECIES STUDY TEXT

Each numbered section will appear on a different screen. The study text is as follows:

1. Thank you very much for agreeing to participate in this study. We're going to start with a preliminary question.

What is your age? [Enter whole number]

{if age<18 **Terminate survey**}. Sorry, if you are under 18, you cannot participate in the study. Please inform the research assistant.

2. Welcome to our study on the regulation of natural resources. This study was put together by university researchers analyzing how people respond to the regulation of natural resources. We want to explore how you would respond to various hypothetical scenarios involving regulation and land use. None of the information or questions are meant to deceive or trick you. We hope that you will find this study interesting. Thank you very much for your responses.

3. General Rules: No talking. No using cellphones. No looking at your neighbor's screen.

You will be paid based on your responses in the following hypothetical scenarios. Your earnings will be paid to you in cash in private. Your decisions are anonymous and confidential.

4. The study consists of up to 20 rounds. Before we begin with the study, we will have a few practice rounds. Instructions for the practice rounds will be on the next screen. Instructions for the 20 rounds will be provided after completion of the practice rounds. A brief survey will follow the two sections.

5. Practice Round Instructions: You are a landowner who owns 100 acres of pine trees that are reaching the age of maturity of 30 years old. Each period represents a year. In each period, you will decide if you want to harvest pine trees to sell them to be made into timber products or if you will allow the trees to stand and keep growing. In each round, you will be informed of the value of the standing timber based on market prices and how old your pine trees are. Older trees are worth more for timber. You will also be informed of the projected value of the timber if you let it grow for another year. After trees are harvested, the land will be replanted with new trees that will slowly grow in value.

In each period, you will be asked to enter how many acres (between 0 and 100) you wish to harvest. When you harvest a portion of your property, you will receive the appropriate percentage of the total value of the timber (so if you harvest 25 acres, you receive 25% of the total value of the timber). The value of harvested timber is added to your practice account for these practice rounds.

6. The trees on your 100 acres are 30 years old and have a current value of \$x if harvested now. If you allow all of the trees to grow to next period, the expected market value next period will be \$p_x.

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 100 (inclusive)]

7. The trees on your 100 acres are on average t years old and have a current market value of $\$p_x$ if harvested now. If you allow the trees to grow to next period, which will be the final round of practice, the expected market value will be $\$p_x$.

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 100 (inclusive)]

8. The trees on your 100 acres are on average t years old and have a current market value of $\$p_x$ if harvested now. This is the final round of practice, so you will not receive any additional money in your practice account for trees that are not harvested now.

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 100 (inclusive)]

9. {if $t=0$ } Nice job harvesting! Your practice account had $\$p_z$ in it. We are now finished with the practice rounds and will move on to the experiment. Going forward, money from harvests will be added to your account that will be paid to you as a cash award upon completion of the study.

{if $t>0$ } Are you sure you did not want to harvest trees that last period? Your practice account had $\$p_x$ in it. If you had harvested all of the standing trees in the final practice round, your practice account would have $\$p_z$ in it. In the study rounds, there will not be a prompt like this to remind you how to maximize the amount in your account. For now, let's try that last harvest again to maximize the amount in your practice account. [return to 8].

10. Study Instructions: We will now begin the study. The basic setup is the same as in the practice rounds. There will be an added factor in the harvest decision that will be described in the following screens. Going forward, money in your account will be paid to you upon completion of the study.

You are a landowner who owns 100 acres of pine trees that are reaching the age of maturity of 30 years old. Each period represents a year. In each period, you will decide if you want to harvest pine trees to sell them to be made into timber products or if you will allow the trees to stand and keep growing. In each round, you will be informed of the value of the standing timber based on market prices and how old your pine trees are. Older trees are worth more for timber. You will also be informed of the projected value of the timber if you let it grow for another year. After trees are harvested, the land will be replanted with new trees that will slowly grow in value.

In each period, you will be asked to enter how many acres (between 0 and 100) you wish to harvest. When you harvest a portion of your property, you will receive the appropriate percentage of the total value of the timber (so if you harvest 25 acres, you receive 25% of the total value of the timber). The value of harvested timber is added to your account and you will receive the amount in your account as payment at the conclusion of the study. You will start with an amount of \$10.00 in your account.

11. There is a rare bird called the speckle-backed woodpecker that resides in the area and inhabits only mature pine trees. In each period, there is a chance that a family of speckle-backed woodpeckers will move onto your property. As your trees grow older, the likelihood that speckle-backed woodpeckers will move onto your property increases because the birds prefer mature trees. If you have mature trees on only part of your property, there is a lower probability that woodpeckers will move onto your property. If you do not have mature pine trees, woodpeckers will not move onto your property.

[randomize with equal weights across C1, C2, T1, T2, T3]

12:C1. Although speckle-backed woodpeckers are rare and considered ecologically valuable, there are no regulatory restrictions associated with their presence. You are given the option of investing \$.25 in each period to improve woodpecker habitat if you wish to increase the probability that woodpeckers will move onto your property.

12:C2. If a family of speckle-backed woodpeckers moves onto your property, federal and state agencies will invoke powers under the Endangered Species Act to prevent you from harvesting any of your timber as they promote conservation of the birds. If that happens, you will get no more profits added to your account. You are given the option of investing \$.25 in each period to improve woodpecker habitat if you wish to increase the probability that woodpeckers will move onto your property.

12:T1. If a family of speckle-backed woodpeckers moves onto your property, federal and state agencies will invoke powers under the Endangered Species Act to prevent you from harvesting any of your timber as they promote conservation of the birds.

State and federal authorities have offered you the option of joining a conservation plan that places some restrictions on your timber harvests, but promises that you will not face more severe restrictions even if woodpeckers do move onto your property. This means that you will never face a total ban on timber harvests, but it will limit the amount you can harvest in each period. You can withdraw from the plan at any time. You are given the option of investing \$.25 in each period to improve woodpecker habitat if you wish to increase the probability that woodpeckers will move onto your property.

12:T2. If a family of speckle-backed woodpeckers moves onto your property, federal and state agencies will invoke powers under the Endangered Species Act to restrict you from harvesting your timber as they promote conservation of the birds.

State and federal authorities have offered you the option of joining a conservation plan that asks you to manage your land in a way that makes it prime speckle-backed woodpecker habitat, but allows you to still harvest some timber. This means that you will never face a total ban on timber harvests, but it will limit the amount you can harvest in each period and will request that you spend money on habitat improvement. If you enter the plan, you will be able to withdraw at any time.

The conservation plan that the authorities have offered you would limit your harvests to no more than 4 acres per period when no woodpeckers live on your property. If you invest \$.25 in habitat improvement in a period, you are allowed to harvest 6 acres of timber in that period. Improved habitat will make it more likely for woodpeckers to move onto your property. Authorities want to encourage good woodpecker habitat, so they reward landowners who have woodpeckers move onto their property. If a family of speckle-backed woodpeckers moves onto your property, you will be allowed to harvest twice as much (8 acres with no habitat investment and 12 acres with habitat investment). You would be given the option to withdraw from the plan during each period.

Do you wish to enter the conservation plan or not enter the plan and harvest without restrictions but face the risk of a ban on timber harvests if speckle-backed woodpeckers move onto your property?

[Enter conservation plan] or [Do not enter conservation plan]

12: T3. If a family of speckle-backed woodpeckers moves onto your property, federal and state agencies will invoke powers under the Endangered Species Act to restrict you from harvesting your timber as they promote conservation of the birds.

This type of regulatory restriction is considered a partial “taking” of your property by the government, so the government is required to pay you “just compensation” for the ban on timber harvests. If speckle-backed woodpeckers move onto your property and agencies ban timber harvests, you will be paid $\frac{3}{4}$ of the market value of your standing timber at that time as “just compensation.” You are given the option of investing \$.25 in each period to improve woodpecker habitat if you wish to increase the probability that woodpeckers will move onto your property.

13. The trees on your 100 acres are 30 years old and have a current value of \$x if harvested now. If you allow all of the trees to grow to next period, the expected market value next period will be \$x. If you do not harvest any trees, there is a y% probability that speckle-backed woodpeckers will move onto your property in the next year.

Do you wish to invest \$.25 in habitat improvement this period? [Yes, improve habitat for \$.20] or [No, do not improve habitat]

If you do not harvest any trees, there is a y% probability that speckle-backed woodpeckers will move onto your property in the next period.

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

{if group T1 & CP} [Enter whole number between 0 and 4 (inclusive)]

{if group T2 & CP}

{if improve} [Enter whole number between 0 and 6 (inclusive)]

{if no improve} [Enter whole number between 0 and 4 (inclusive)]

{if other} [Enter whole number between 0 and 100 (inclusive)]

14-31. The trees on your 100 acres are on average t years old and have a current market value of \$ x if harvested now. If you allow the trees to grow to next period, the expected market value will be \$ x .

{if no woodpeckers} Do you wish to invest \$.25 in habitat improvement this period? [Yes, improve habitat for \$.25] or [No, do not improve habitat]

If you do not harvest any trees this period, there is a $y\%$ probability that speckle-backed woodpeckers will move onto your property in the next year.

{if group T1 & CP or T2 & CP} Do you want to continue in the conservation plan or withdraw from it? [Continue in conservation plan] or [Withdraw from conservation plan]

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

{if group T1 & CP} [Enter whole number between 0 and 4 (inclusive)]

{if group T2 & CP}

{if improve} [Enter whole number between 0 and 6 (inclusive)]

{if no improve} [Enter whole number between 0 and 4 (inclusive)]

{if other} [Enter whole number between 0 and 100 (inclusive)]

{if woodpeckers} A family of speckle-backed woodpeckers has established a colony on your property.

{if Group C1} How many acres of trees do you wish to harvest timber this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 100 (inclusive)]

{if group T1 & CP} How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 4 (inclusive)]

{if group T2 & CP} How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

{if improve} [Enter whole number between 0 and 12 (inclusive)]

{if no improve} [Enter whole number between 0 and 8 (inclusive)]

{if Group T3} Federal and state regulators have banned the harvest of timber on your property in order to protect this rare bird. You are being compensation with “just compensation” of $\$(3/4)x$ that is being added to your account.

{if other} Federal and state regulators have banned the harvest of timber on your property in order to protect this rare bird. {skip to 33.}

32. The trees on your 100 acres are on average t years old and have a current market value of $\$x$ if harvested now. This is the final round of the study, so you will not receive any additional money in your account for trees that are not harvested now.

{if no woodpeckers} Do you wish to invest \$.20 in habitat improvement this period? [Yes, improve habitat for \$.25] or [No, do not improve habitat]

{if group T1 & CP or T2 & CP} Do you want to continue in the conservation plan or withdraw from it? [Continue in conservation plan] or [Withdraw from conservation plan]

How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

{if group T1 & CP} [Enter whole number between 0 and 4 (inclusive)]

{if group T2 & CP}

{if improve} [Enter whole number between 0 and 6 (inclusive)]

{if no improve} [Enter whole number between 0 and 4 (inclusive)]

{if other} [Enter whole number between 0 and 100 (inclusive)]

{if woodpeckers} A family of speckle-backed woodpeckers has established a colony on your property.

{if Group C1} How many acres of trees do you wish to harvest timber this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 100 (inclusive)]

{if group T1 & CP} How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

[Enter whole number between 0 and 4 (inclusive)]

{if group T2 & CP} How many acres of trees do you wish to harvest this period? Enter 0 to let all of your trees continue to grow.

{if improve} [Enter whole number between 0 and 12 (inclusive)]

{if no improve} [Enter whole number between 0 and 8 (inclusive)]

{if Group T3} Federal and state regulators have banned the harvest of timber on your property in order to protect this rare bird. You are being compensated with “just compensation” of $\$(3/4)x$ that is being added to your account.

{if other} Federal and state regulators have banned the harvest of timber on your property in order to protect this rare bird. {skip to 33.}

33. We have now completed the study. Your account currently has \$z in it.

34. We now proceed to a brief survey to get a little background information. All answers will remain anonymous.

35. What is your gender? [Female] or [Male]

36. Generally speaking, do you usually consider yourself as a Republican, a Democrat, an Independent, or Other? [Republican], [Democrat], [Independent], [Other]

37. Do you consider yourself an environmentalist? [Yes] or [No]

38. Are you a member of an environmental group such as the Sierra Club, Nature Conservancy, or World Wildlife Fund? [Yes] or [No]

39. Are you currently a full time student? [Yes] or [No]

40. Do you, or have you ever, worked full time in agriculture, forestry, or mining? [Yes] or [No]

41. What is your race? [White], [African American], [Asian], [Hispanic / Latino], [Other], [Prefer not to answer]

42. Are you a United States citizen or permanent resident? [Yes, U.S. Citizen], [Yes, Permanent Resident], [No], [Prefer not to answer]

43. Are you a smoker? [Yes], [No], [Occasionally]

44. Suppose you were betting on horses and were a big winner in the fourth race out of fourteen total races. Would you be more likely to continue playing or take your winnings?

[1: Definitely continue playing], [2: Probably continue playing], [3: Not sure], [4: Probably take my winnings], [5: Definitely take my winnings]

45. Do you agree with the following statement? I like new and exciting experiences, even if I have to break the rules.

[1: Strongly agree], [2: Agree], [3: Neither agree or disagree], [4: Disagree], [5: Strongly disagree]

46. In general, did you feel this study was clear or confusing to participate in?

[1: Perfectly clear], [2: Mostly clear], [3: Middle], [4: Quite confusing], [5: Very confusing]

47. Thank you for your participation! Please inform the Research Assistant that you have completed the study and he or she will let you know how to collect your payment.

Study variables

t: average age of trees

$t = f(t_{\text{last period}}, \text{previous harvest})$

x: value of trees currently standing on property depending on average age

$x = f(t)$

y: probability that woodpeckers move onto property

$y = f(t, \text{habitat improvement})$

z: amount in account

$z = f(\text{previous harvest})$