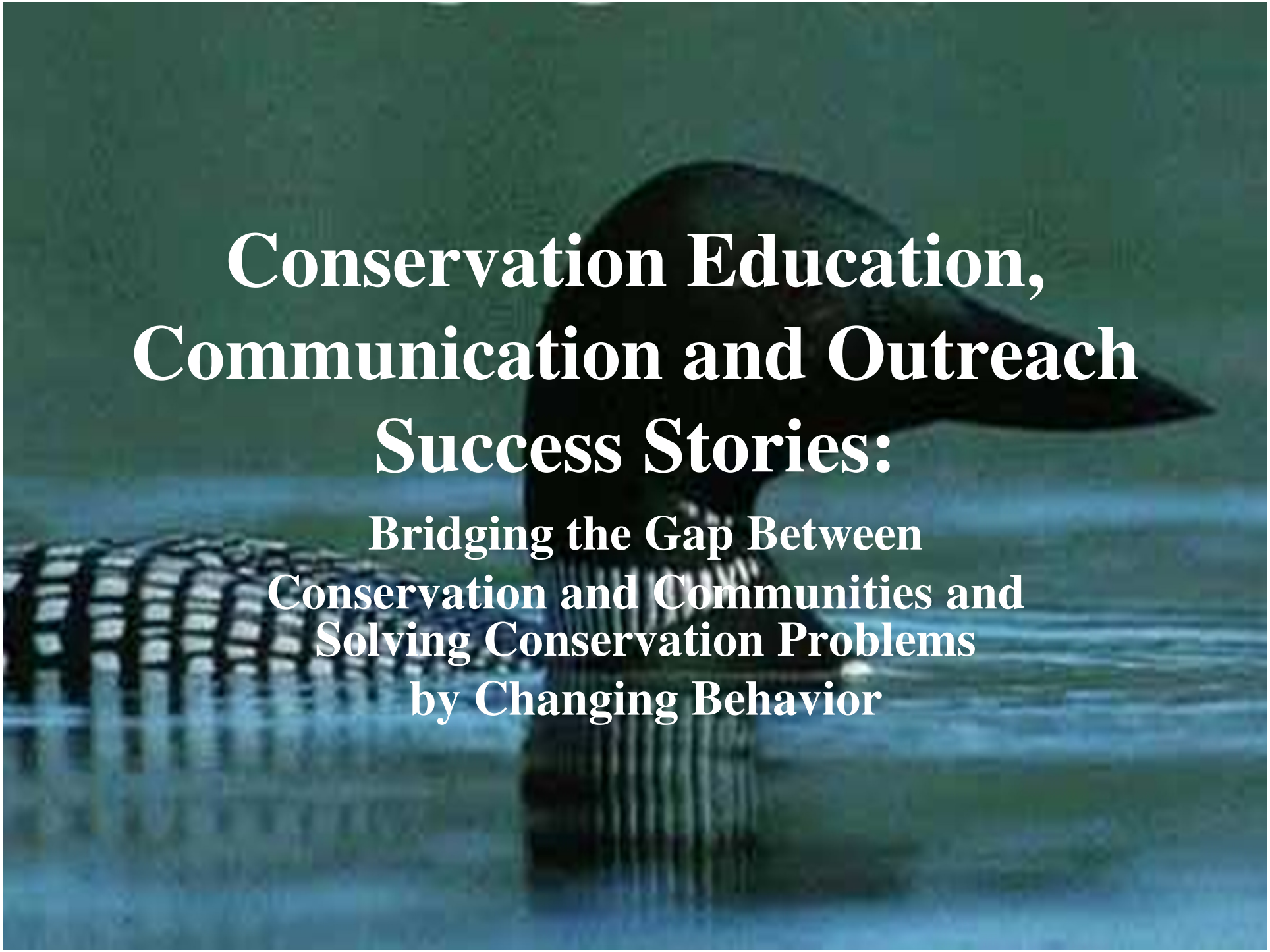
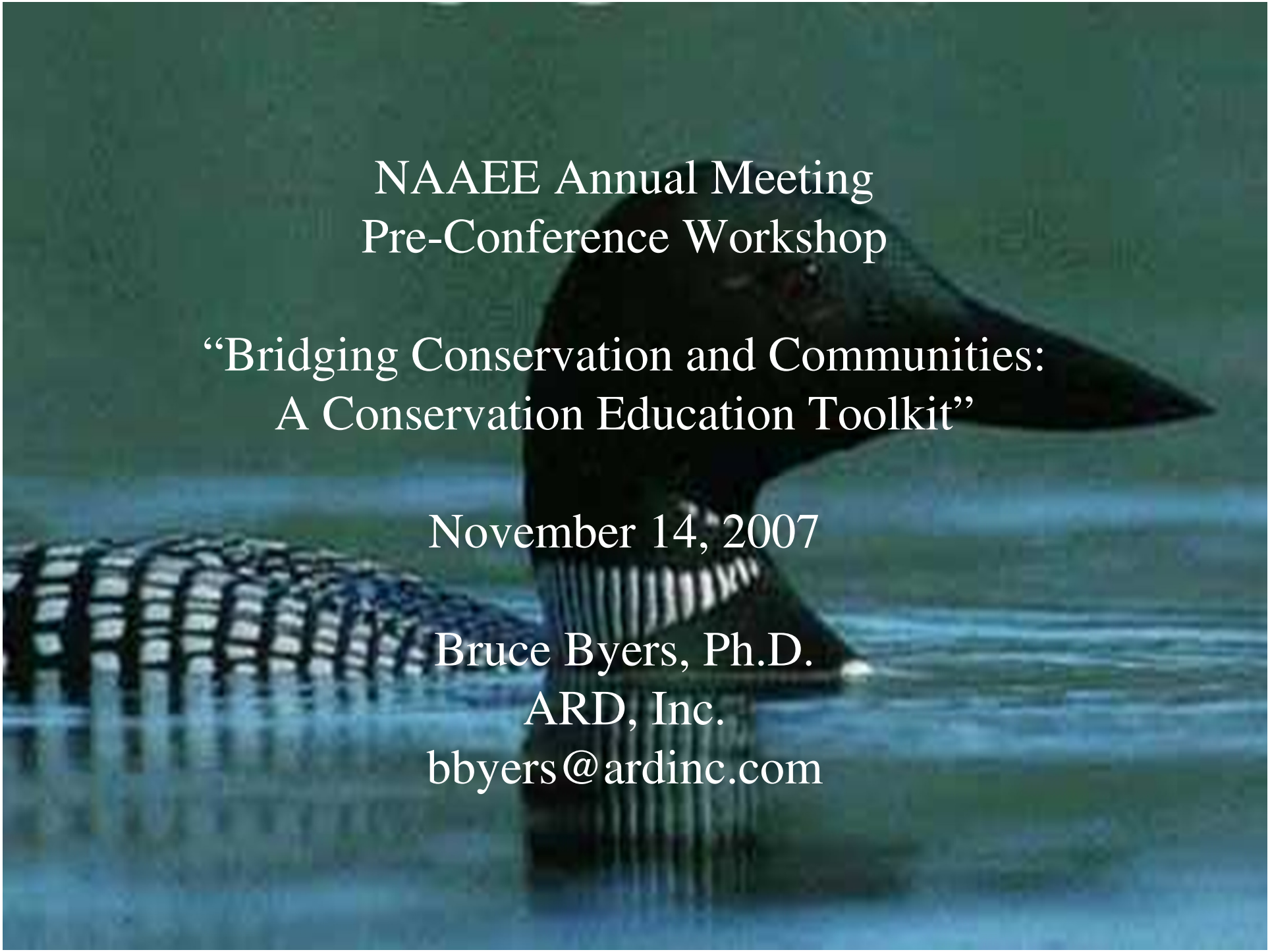


Conservation Education, Communication and Outreach Success Stories:

Bridging the Gap Between Conservation and Communities and Solving Conservation Problems by Changing Behavior



NAAEE Annual Meeting
Pre-Conference Workshop

"Bridging Conservation and Communities: A Conservation Education Toolkit"

November 14, 2007

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Three topics for this talk:

- Background and trajectory: where we're coming from
- Success stories and lessons learned: what we know
- Applying what we know in new situations

Background and trajectory: where we're coming from

- From providing information to understanding and influencing behaviors in conservation
- Education? Communication? Outreach? Social Marketing?: YES! All of the above!

Behaviors in Conservation Project Publications 1993-2000 USAID Biodiversity Support Program (BSP)

- Understanding and Influencing Behaviors in Conservation and Natural Resources Management. 1996. http://www.worldwildlife.org/bsp/publications/search.cfm?pubno=4
- Understanding and Influencing Behaviors: A Guide. 2000. http://www.worldwildlife.org/bsp/publications/keysearch.cfm?search=Understanding+and+Influencing+Behaviors%3A+A+Guide

Success stories and lessons learned: what we know

- "Education, Communication and Outreach (ECO) Success Stories: Solving Conservation Problems by Changing Behavior" (June, 2003)
- A report prepared for the USFWS Division of Education Outreach, National Conservation Training Center

Goals of the Study

- To understand when and how education, communication, and outreach (ECO) approaches can help solve conservation problems
- To identify the factors that contribute to successful ECO approaches
- To provide recommendations for applying ECO approaches in new situations

Case Studies of Success

- Sixteen cases were analyzed
- Cases were chosen because each had:
  - An explicit ***behavioral objective*** – to ***change behavior*** that harmed species or habitats, and…
  - Before and after measures of behavior to show ***measurable results***

FWS Examples

- Geese in Alaska
- Bull Trout Identification
- Black Duck Identification
- Anchoring Options for Mississippi River Barges
- Grizzly Bear Safety
- Mexican Wolf Recovery Program
- Migratory Birds and Oil Field Waste Pits
- Snowy Plovers in California
- Loons and Lead Poisoning

Non-FWS Examples

- Abalone in California
- Keeping People on Trails in Mt. Rainier National Park
- Reducing Roadkill
- Scuba Divers and Coral Damage
- Seabirds in Quebec
- Tidepool Conservation in California
- Tourists Feeding Dolphins in Australia

Analyzing the Cases: Questions

- Which factors affected the behavior and/or motivated behavior change?
- Which factors were most important?
- Was the harm deliberate, or inadvertant?

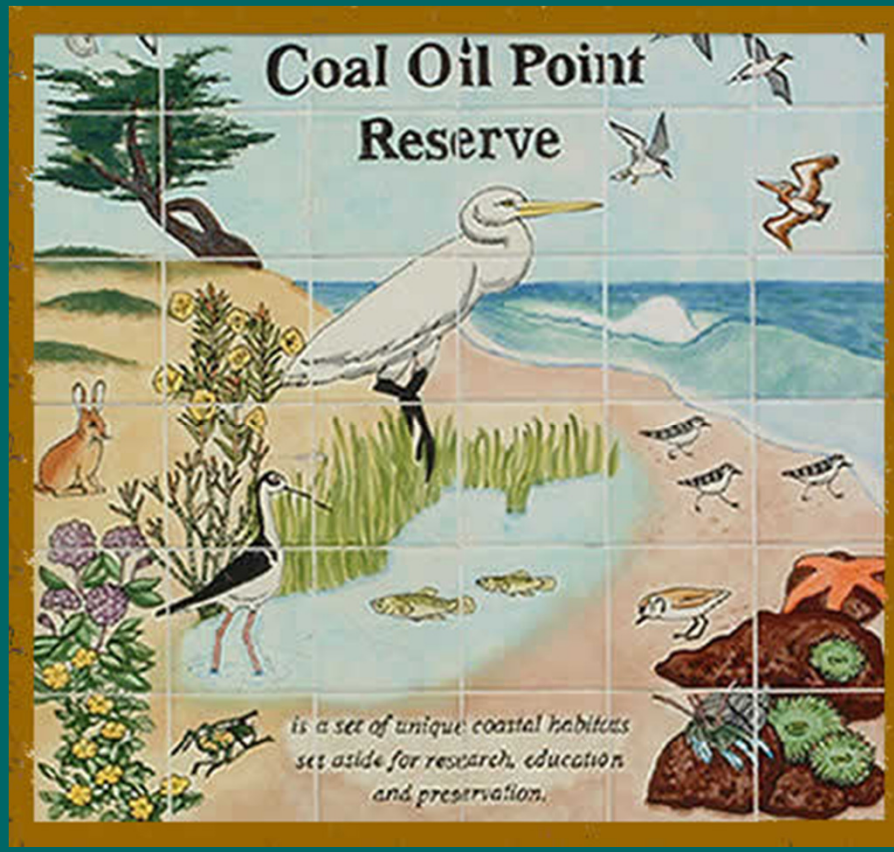
Factors That Can Influence Behavior:

- Information, knowledge, & awareness
- Values
- Social norms
- Options
- Skills
- Positive economic incentives, rewards
- Laws & enforcement

The Most Common Critical Factors

- information
- social norms (*i.e.*, “peer pressure”)
- options
- laws and enforcement

Protecting Snowy Plover Nests at Coal Oil Point Reserve, California: An Example



What is it?
A part of the Natural Reserve System of the University of California.

Where is it?
At UCSB in Santa Barbara California

Your tour begins here.

A comprehensive program for protecting Snowy Plovers at Coal Oil Point Reserve, California, involved :

- signs and displays at beach entrances with information about plovers and how to minimize disturbance to nests
- “symbolic fencing” -- using posts and rope – of a core nesting area to “close” it to people and dogs

And …

- public contact by volunteer beach "docents"
- closure of a beach-access trail through the plover roosting area
- consistent enforcement by police of the dog leash law

Measurable Success!

- Snowy Plovers had stopped breeding at Coal Oil Point in the 1970s due to increasing levels of human disturbance…
- In 2001, only 7% of dogs on the beach were leashed; in 2002, after one year of the program, 90% were leashed, and…
- Plovers began nesting again in 2002 for the first time in 30 years, only one year after reducing human and dog disturbance to the core plover area.
- 14 chicks fledged in 2002, the first year of nesting.

What Factors & Interventions Caused This Success?

- Providing information
- Reinforcing social norms
- Providing options
- Increasing enforcement

Is the is the harm to plover nests by beach users deliberate, or inadvertent?

- Inadvertent! Beach users are there to enjoy the beach, and, probably almost without exception, do not want to hurt plovers
- In this therefore, providing ***information*** and ***options*** for beach use that doesn't hurt plovers can influence the behavior of most beach users… ***social norms*** and ***laws and enforcement*** can influence the behavior of most of the rest.

Signs and displays providing information about plovers and rules for minimizing nest disturbance…

- … may alone be enough to influence the behavior of some beach users, and
- … information provides the foundation that allows other factors that influence behavior – ***social norms***, availability of ***options***, and ***enforcement*** of rules and laws – to work.

Public contact by volunteer beach "docents"…

- … provides additional ***information*** about plover biology and beach rules, specifically tailored to different types of beach users, and
- … encourages compliance with beach rules (dog leash laws, nesting area closures) through ***social norms*** (i.e., "peer pressure")

Posts and rope to create a "symbolic fence" marking a core nesting area…

- … creates a psychological "barrier" mainly through ***social norms***, not through physical exclusion, and
- … provides ***information*** to beach users,
- … allows beach users the ***option*** of enjoying the the rest of the beach while not disturbing plover nests.

Closure of a beach-access trail through the plover nesting area…

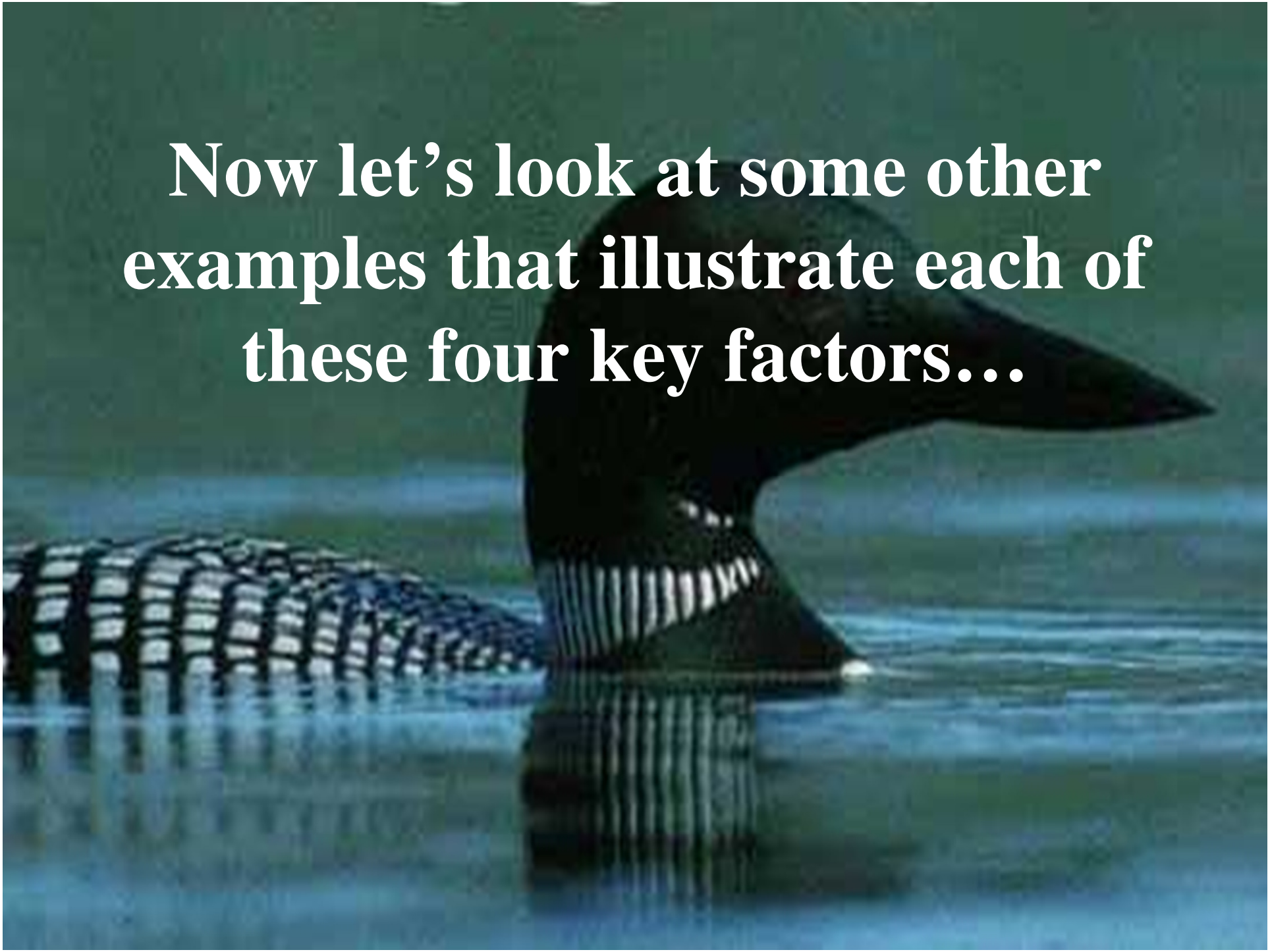
- … allows beach users the ***option*** of enjoying the the rest of the beach while not disturbing plover nests.

Consistent enforcement by police of the dog leash law…

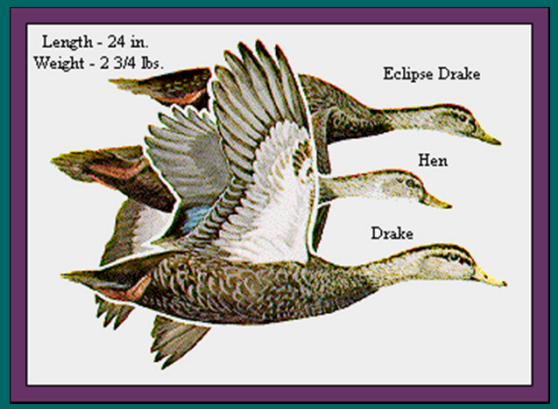
- …can change the behavior of the relatively small number of beach users not already influenced by ***information***, ***social norms***, and the availability of ***options***

As in the Snowy Plover example, these four factors often are the most important in other cases:

- Providing information
- Reinforcing social norms
- Providing options
- Increasing enforcement


Now let's look at some other examples that illustrate each of these four key factors…

Cases in which information, knowledge, & awareness were especially critical:



- Preventing damage to coral reefs by scuba divers
- Conserving black ducks through a duck identification campaign for hunters

Preventing damage to coral reefs by scuba divers

- **Program Goal:** To reduce incidental damage to corals by recreational divers, the main cause of coral death at the most heavily-used dive sites in Ras Mohammed National Park on the Red Sea, in Egypt
- **Program Interventions:** All divers were required to attend an "ecological briefing," illustrated with photographs and sketches, about coral biology and the impacts of divers in protected areas

Preventing damage to coral reefs by scuba divers…

- **Measurable Results:** A single briefing reduced the number of contacts by divers with corals by 71%, a highly statistically significant result
- **Conclusions:** The behavior of divers can be significantly influenced by providing information only, with no enforcement

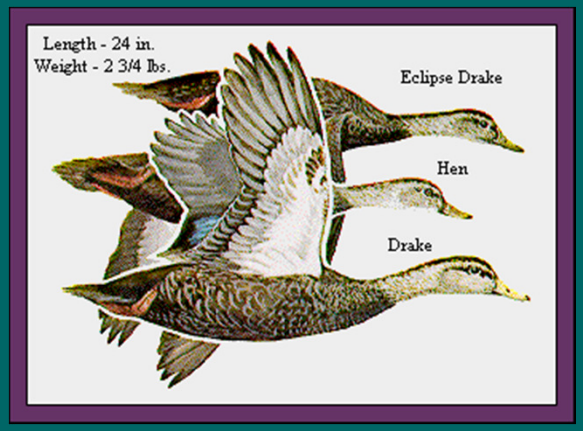
Conserving black ducks through a duck identification campaign for hunters

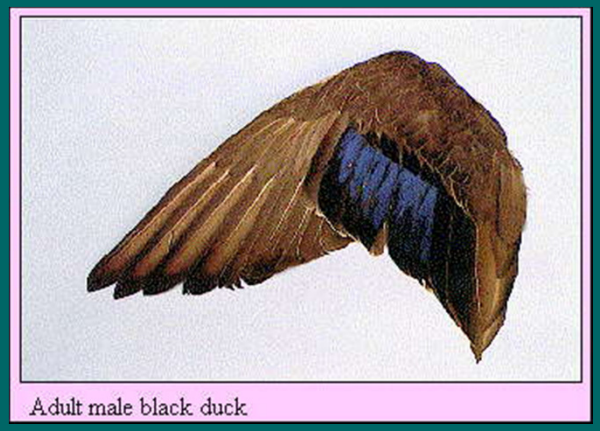
- **Program Goal:** To reduce the inadvertent harvest of the threatened black duck by hunters who misidentify them as other non-threatened species; the long-term decline of black ducks between 1967 and 1995 was related to excessive harvest by hunters, not habitat loss.

Conserving black ducks through a duck identification campaign for hunters

- **Program Interventions:** Information developed and made available to hunters to teach them how to identify ducks in flight so they don't shoot black ducks mistakenly

Conserving black ducks through a duck identification campaign for hunters




Adult male black duck

- **Measurable Results:** Duck harvest statistics by species show an apparent decline in black duck harvest. Black duck populations seem to have stabilized by 1995.
- **Conclusions:** Providing information to hunters about duck identification allowed them to comply with more stringent legal restrictions on the take of black ducks

Cases in which social norms were especially critical:

- Conserving seabirds in Quebec
- Keeping people on trails to protect meadows on Mt. Rainer

Conserving seabirds in Quebec

- **Program Goal:** To reduce the illegal harvest of nesting seabirds and their eggs by rural people in bird sanctuaries along the north shore of the Gulf of St. Lawrence

Conserving seabirds in Quebec

- **Program Interventions:** Began in 1981, provided informational materials and presentations for adults and children in schools; made a documentary film; ran a summer youth conservation program and sanctuary tours for local people.

Conserving seabirds in Quebec

- **Measurable Results:** In 1981 54% of local people surveyed said hunting puffins should be legal; in 1988 only 27% agreed. In 1981 76% of families reported harvesting seabirds and eggs; in 1988 this had dropped to 48%. Populations of most threatened seabirds nesting on sanctuary islands roughly doubled between 1981 and 1988.

Conserving seabirds in Quebec

- **Conclusions:** A multifaceted program based mainly on providing information can significantly change values, social norms, and behavior with little emphasis on law enforcement. Behavioral changes appear to allow population increases in threatened species.

Keeping people on trails to protect meadows on Mt. Rainer

- **Program Goal:** To keep people on trails in fragile meadow habitats near timberline in Mt. Rainier National Park
- **Program Interventions:** Sign messages and types of barriers tested for effectiveness before being used; effectiveness of roving uniformed park rangers tested before being used

Keeping people on trails to protect meadows on Mt. Rainer

- **Measurable Results:** Sign threatening fines for off trail hiking reduced the behavior to 1.7% of users, compared to 4.9% of users hiking off-trail after reading non-threatening sign. The presence of a uniformed park ranger reduced off-trail hiking to 0%.

Keeping people on trails to protect meadows on Mt. Rainer

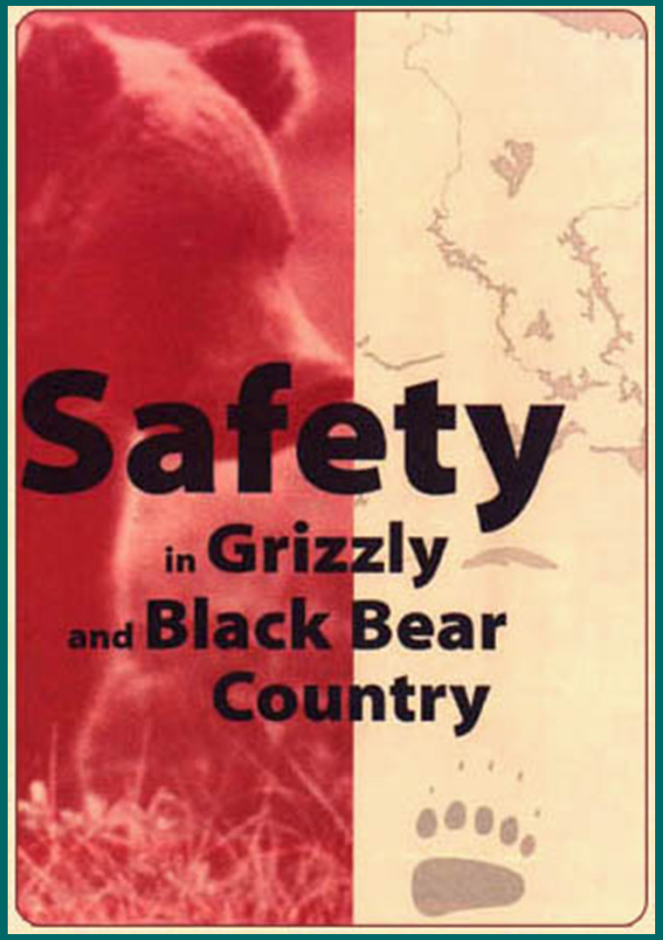
- **Conclusions:** Although informational signs create knowledge that off-trail hiking damages vegetation, a significant number of people (nearly 5%) don't change their behavior. Threat of enforcement does change behavior. Uniformed rangers reinforce a ***social norm*** against hiking off-trail even without actual fines and enforcement action.

Cases in which having options helped with conservation:

- Hunting safety in grizzly bear country

- Protecting loons from lead poisoning

Hunting safety in grizzly bear country



- **Program Goal:** To reduce the number of grizzly bears killed by people, especially hunters, in "self-defense."
- **Program Interventions:** A training program for guides & outfitters in Wyoming about how to behave safely in grizzly country, including information on how to tell grizzly bears from black bears, how to set up a bear-safe camp, and how to use pepper spray to deter a bear attack.

Online Bear Identification Test for Hunters

- **Reminders For Spring Black Bear Hunters**
- To hunt in the spring black bear season, black bear hunters must purchase a license by April 14. Licenses purchased after April 14 can only be used for the fall black bear season. Only one black bear license a year is issued to an individual.
- Hunters are reminded that they must successfully complete bear ID training before purchasing a black bear license.
- Hunters who have already successfully passed the bear ID training do not need to retake the training. However, all black bear hunters are urged to continuously hone their bear identification skills to distinguish a black bear from a grizzly. Grizzly bears, a federally protected threatened species, are not hunted in Montana.
- To take the test, go to the FWP web site at www.fwp.state.mt.us under Education and click on the Black Bear ID test icon. Complete the training and test, and then present the on-line certificate you receive to purchase a license this year. Paper versions of the training and test are also available.
- For details on black bear hunting, contact the nearest FWP regional office or see the 2004 black bear hunting regulations available at all FWP regional offices, license providers, or on the FWP web site at www.fwp.state.mt.us.

Hunting safety in grizzly bear country

- **Measurable Results:** Killings of grizzlies in "self defense" by hunters or guides decreased from 7-9 per year before 1998, to 4-5 since then, after training course began. Since training program began in 1998, only one grizzly has been killed by a trained guide in "self defense," and all other killings (4-5 per year) have been by guides who have not received the training.

Hunting safety in grizzly bear country

- **Conclusions:** Physical changes in camp setup, cooking, and waste disposal reduce the attractiveness of hunting camps to bears; distinguishing between more-dangerous grizzlies and less-dangerous black bears, and having pepper spray as a deterrent, gives guides and hunters an ***option*** to avoid killing grizzly bears

Hunting safety in grizzly bear country

- **Conclusions -- continued:** This example shows the trade-off in time and money between ECO approaches such as this training program and law enforcement needs. Because grizzlies are listed as an endangered species, each "self-defense" killing triggers an expensive and time-consuming investigation. Reducing the incidence of such killings saves time and money for law enforcement staff.

Protecting loons from lead poisoning

- **Program Goal:** To convince fishermen to stop using lead sinkers and jigs and switch to non-toxic tackle, because lead poisoning from fishing tackle is the #1 cause of loon death in New England.
- **Program Interventions:** Informational brochure distributed with fishing licenses in New Hampshire; newspaper & radio reports on the issue; tackle-exchange programs in which non-toxic tackle is distributed at fishing events.

Protecting loons from lead poisoning

- **Measurable Results:** ***Insignificant*** reductions in lead poisoning of loons after three years of program to provide options!
- **Conclusions:** Although a law banning lead tackle on lakes took effect in New Hampshire in 2000, it is not enforced, and lead tackle is sold and allowed for fishing in streams and rivers. Even though ***options*** exist, stronger ***laws and enforcement*** are needed to close this loophole, and enforcement of the ban is needed.

Cases in which laws and enforcement were important:

- Protecting migratory birds from oil field waste pits

- Protecting snowy plovers at Vandenberg Air Force Base

Protecting migratory birds from oil field waste pits

- **Program Goal:** To increase the level of voluntary compliance by small oil producers with federal and state laws that require all oil to be removed from waste water put into pits in oil fields, or the pits to be covered. Oil on these pits creates a death trap for migratory birds.

Protecting migratory birds from oil field waste pits

- **Program Interventions:** Information about the law and simple technical ***options*** for solutions (such as nets to cover pits) was provided, followed by a grace period for compliance, then inspections and warnings. After another time lag, non-compliers were fined.

Protecting migratory birds from oil field waste pits

- **Measurable Results:** In Colorado, initial surveys showed that 77% of small producer waste pits were uncovered and had a layer of oil. Within 6 months the number was reduced to 10% by voluntary compliance.

Protecting migratory birds from oil field waste pits

- **Conclusions:** Voluntary compliance based on information and available technical options can significantly reduce the need for law enforcement action.

Protecting snowy plovers at Vandenberg Air Force Base

- **Program Goal:** To reduce human disturbance to wintering and nesting plovers.
- **Program Interventions:** Seasonal, well-posted and well-enforced closures of beach areas used by plovers.

Protecting snowy plovers at Vandenberg Air Force Base

- **Measurable Results:** The number of violations of closed areas has dropped every year since 1994. Hatching rates of plovers increased from 41% in 1996 to 59% in 2001. Nest numbers and estimated adult population increased by about 30% between 2000 and 2001.
- **Conclusions:** Thorough and consistent enforcement was possible through cooperation between the FWS and military police at the Vandenberg AFB!

A case for positive economic incentives & rewards?

- Not used very often, but…
- May be critical in some cases, such as wolf reintroduction and recovery…
- Ranchers may gradually change their behavior of killing reintroduced or dispersing wolves if compensated fairly for stock losses.

Lessons from this analysis:

- Information, social norms, options, and laws & enforcement are often the most important factors influencing conservation behaviors.

Lessons from this analysis:

- Information alone is seldom sufficient to change behavior, but it may be necessary in most cases; in certain cases it can be a catalytic factor.
- Information must be provided to allow other interventions to work; information about options, economic incentives, and laws must reach the appropriate target audiences if these factors are to influence their behavior.

Lessons from this analysis:

- Changing values is seldom a major factor in influencing specific conservation behaviors; behavior can change with no change in values.
- Positive economic incentives do not seem to be used very much to influence specific conservation behaviors, but do seem to be effective in certain cases.

Lessons from this analysis:

- The need for expensive law enforcement can be reduced by carrying out cheaper interventions first (for example, providing information, options, and reinforcing social norms). These often-cheaper interventions can reduce the number of "doers" of the behavior that will require enforcement action.

Lessons from this analysis:

- Most successful interventions to change behaviors affect two or more of the four critical factors. Interventions that provide information, reinforce social norms, provide options, and strengthen law enforcement can be quite successful at changing behavior, even in complex situations.

Three keys for applying these lessons in new situations:

- Involve a wide range of "users" and "stakeholders" to identify target audiences – the "doers" of behaviors harmful to species or habitats
- Identify the factors that influence the harmful behaviors
- Design and implement activities to influence the key factors that motivate those harmful behaviors